

Estimating The Manpower, Personnel, And Training Requirements Of The Army's Corps Support Weapon System Using The HARDMAN Methodology

APPENDICES

John L. Balcom Thomas E. Mannle, Jr. Dynamics Research Corporation

ARMY RESEARCH INSTITUTE FORT SILL, OKLAHOMA, FIELD UNIT

CORPS SUPPORT WEAPON SYSTEM





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Logistics Analysis	Training Requirements E	stimation
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configurations and compared them		
methodology were applied. The re		
vehicle alternative was preferred fr		
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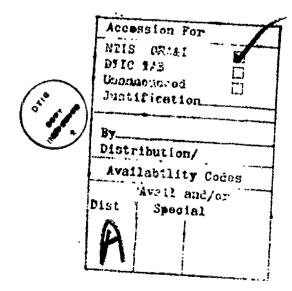
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APPENDIX A CONSOLIDATED DATA BASE



APPENDIX A1
SYSTEM FUNCTIONAL REQUIREMENTS

SYSTEM CSWS FUNCTIONAL AREA OFFRATE CSWS	S SYSTEM F-JNCTION	SYSTEM SUB-FUNCTION	A1-1. SYSTEM FUN	ICTIONAL REC	DUIREMENTS ANA	LYSIS WORK PERFORMANCE STANDARD	SHEET. OUTCOME Delay enemy Deray enemy
OPERATE CSWS				Time: Duration Mission response Target servicing rate	Increase Reduce Increase	Continuous 300KM max	Disrupt enemy Continuous Keep target in central battle to a manageable number 300KM max
	Intelligence			Range	Increase		
		Acquire target		Range	11Cr0452		of the streaming the service and the service supply of standard services and services and services and services
(1188) 4.5			Sayrch and detect target Identify target	Accuracy		% correct	and or supported the financial designation of the support of the s
			Determine target focation	Time Freugy?/	Increese	Real time data	Hit target
		-4		Accuracy	Increase	P of hit	
			Fredar, future target	Accuracy		P of hit	
		Assess terminal effects					
		*****	Assert Stone of the State of th	Action	Incresse	A PARTY AND A PART	
-			Datermine amine correction	\$(U)	Raduce		Hit tarpet
				Acturacy	Increase	P of hit	
	Communicate	and and an interference of the control of the contr	A PARTY OF THE PAR	Range	Increase	KM	
			Filmy	pecds			
				Volume	Increase		
		Transmit information					

ster Combar power moving to contral battle

• Hard armor

• Medium armor

• Soft

Mobility

Enemy location

Target density Mobility Target location

Continues &

The state of the s

Deep indirect fire systems
Command and control sites
An defense sites
Radar sites
Logistic and support

THREAT CONFITION
Terget donnty

JUNICTIONAL AREA

SHIET 1 of 7

24 hour operation Terget density

OUTCOME SYSTEM FUNCTIONAL REQUIREMENTS ANALYSIS WORKSHEET. minute targets per day Minutes PERFORMANCE STANDARO IMPROVEMENT MEASURE Mission response Tenget servicing Analysis Accuracy
Time: Response time
Ouamilty Time e Receive MET deta FUNCTIONAL ELEMENT e Transmit factical e.g., e Receive tactical a.g., . Transmit target . Micro Ware e.g., e Television fire order fire order e.g. e Volca e Print e Data e.g., • Voice • Video .g., FM • AM • SSB • Print • Dars Medium Content Format Medium Format TABLE A1-1. SUB-FUNCTION
Transmit information Receive information SYSTEM SYSTEM FUNCTION Communicate (continued) ర SYSTEM CSWS AREA OPERATE CSW3 (continued) FUNCTIONAL.

THREAT CONDITION
Target density
Mobility

Target location

SHEET 2 of 7

1

The second second

Target type Tactical situation

Maximum damage to enemy tectical position/ strength

minutes simultaneous

Reduce

Analyze target data

targets

Acouracy

Compile target data base
Define and select candidate
targets
Prioritize targets
Dispose of non-selected
targets

Target density

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SHEFT 3 of 7	THREAT CONDITION	•			A THE RESIDENCE AND THE RESIDENCE AND THE PARTY OF THE PA	Target size	Target composition	Tactical situation	And the signal for the section of th	,	Farget density Farget location	Target movement	Target composition	• Hard armor	• Medum armor	Soft																						
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SIS WORKSH	PEHFORMANCE STANDARD				Annual Market Market State of									Error						P of hit							P of hit											
ENTS ANALY	IMPHOVEMENT	Reduce	Reduce								Reduce		Increase	Increase					Reduce							Reduce												
SYSTEM FUNCTIONAL REQUIREMENTS ANALYSIS WORKSHEET.	:	Time: Mission response	Analysis	Accuracy		Accuracy			WWW. Property of the Control of the		Target servicing	Analysis	Accuracy	Accuracy					Time	Accuracy						Time	Accuracy											
	FUNCTIONAL ELEMENT				Validato target data	Determine level of attack	Design (tailor) attack	Determine munitions	Select fire units	Anicala tachical life older				Compute standard	conditions	- Standard MET	- Standard position		corrections	. MET	- Earth rotation	- Gravity vector	- Drift	- Position	- Observed	Compute firing tolution	. Range	Azimuth of fine	Sustainer cutoff	- Range factors	- Fuze setting	· Chadrent elevation	- Aim time	. Tinye to fire	- Time of flight			
TABLE A1-1.	SYSTEM SUB-FUNCTION Perform dectical line	control									Perform technical fire control						•																		-		~	
S	SYSTEM FUNCTION C2 (continued)		- 95 2										-																		<u></u>							
SYSTEM CSWS	FUNCTIONAL AREA CHERATE CSWS	(continued)		***	-^ FE				,				_																							Į	0.0	_

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SYSTEM		TABLE A1-1. S	SYSTEM FUNCTIONAL	IL REQUIREMENTS ANALYSIS WORKSHEET	ANALYSIS	WORKSHEET.	HS	SHEET 4 of 7
FUNCTIONAL	SYSTEM	SYSTFM				PERFORMANCE		
AREA	FUNCTION	SUB FUNCTION	FUNCTIONAL	MEASURF.	EMPROVE MENT	STANDARD	OUTCOME	THERAT CONDITION
		• III ead inter a value was designed for a v v v vide and v v v vide and v v v v v v v v v v v v v v v v v v v		Time: Rate of 110		11 H H H H H H H H H H H H H H H H H H	Hit target	
OPERATE	Shoot		•	Range	Increase	150-200KM		Target location
CSWS				Accuracy		Error		Target type
(continued)		Prepare the wespon for	And the second s	Time	Beduce			
		floring		Accuracy	Increase	Error	Error	
			Determine weapon location					
			Determine weapon direction					
			Determine weepon attitude					
			Determine no standard conditions					
		Alm weepoo	A STATE OF THE PROPERTY OF THE	Tine	Reduce		Hit target	
				Accuracy	Increase			
		- -	Set elevation					
			Set deflection				AND THE RESIDENCE OF THE PROPERTY OF THE PROPE	
			Compensate for side stope			8:10 degree side		
				ALI MERINANAN GARAKI INGBATAK MENANYI INGGA KITEMBATAK DENGANDA KANDA KANDA KENTENDA PERINANSA PERINANDA PERINA	West desired the section of the sect		ale de la colomica de	A STATE OF THE PERSON OF THE P
			Validate weapon					
		AND THE PROPERTY OF THE PROPER	A THE PROPERTY OF THE PROPERTY	Time	Reduce	minutes per	ANGLICA ANGLIC	Target density
		Load alaunchar				round		
			Select projectile					Terget type
			Load projectile					
				Time	Reduce	minutes	Hit tanget	Target location
			Fire weepon					Targat density
		Launch projectile	Re-estabilish initial wespon state					
			Adjust projectile flight	Time		Real time		
				Accuracy		Error		
ن _{ىس}		Detonate manisien		Dud rate		P of dud		
	Navigate on Land			TIME:	Нибисе			Enony mobility
				Accuracy	Increase			Engray dansity
		Determine location data						
			Determine own location					
			Determine destination					
			Determine restricted areas					
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WIISAS	TABLE A1.1.	SYSTEM FUNCTIONAL REQUIREMENTS ANALYSIS WORKSHEET	IAL REQUIREMENT	S ANALYSIS	WORKSHEET		SHELT 5 of 7
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AREA FUNCTION	SUB FUNCTION	FUNCTIONAL	MI ASURI	IMPROVEMENT	QHYONY IS	To the state of th	
S.A.	Ž						
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		Detarning travel heading	THE THE PROPERTY OF THE PROPER	d appliktioner bestehe betreet betreet betreet betreet bestehe betreet bestehe betreet bestehe betreet bestehe	CANAMISTANDE AND THE PROPERTY OF THE PROPERTY	AMARAMAN AM	
	-	Chatermine travel speed		THEOREM ST. SEC. SEC. SEC. SEC. SEC. SEC. SEC. SEC	A SEA PROPERTY OF THE PROPERTY	The second second second superior superior second superior second second second second second second second se	
		Datermine fuel consumption			A SECURIOR OF THE PERSON OF TH	. Des de la company de la c	
		Optarnine arrival time	and the second section of the second second section is the second second section of the second secon	ore to the control comment in the property of the pro-	THE PERSONNEL PROPERTY OF THE PERSONNEL PROP	MARKET PROPERTY AND ASSESSMENT OF THE PROPERTY	and the deleterance of the state our deleterance and the state of the
	The second secon		Speed. Tung	Reduce		Reduced vulnerability	Mobility
. '6;"			Distance	Increase	KM/HH		Counterfire capability
	·		Ranga	Increase	KW		
	Displace CSWS		Tinw	Anduce	A PARTY DESCRIPTION OF THE PROPERTY OF THE PARTY OF THE P		
	Move CSMS to new		Speed: Time	Reduce	KW/W		
	location	TO THE RESIDENCE TO THE PROPERTY OF THE PROPER	Distance	increase.	And the second second and second seco		
	E.nlace CSWS		Yime	Reduce		e anniem der bestämmigt eing dit bilder With bibberspatter i Bestä besammet für den eine gester bestämmigt der	
Survive threat	<u> </u>	M. Mart Myseself Hermannelm Library Serva M. Martin Barrary Co. B. W. M. M. Consequent National Martin Land M.	Availability	Increase	P of misson	Reduced vulnerability	
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	Protect CSMS equinst		Detretion		P of mission completion	Reduced vulnarability	capability
	Protect CSMS appliest	AND THE PROPERTY OF THE PROPER	Availability		P of mission	Reduced vulnerability	Enamy monitions
	Political Vicinities				Marin Province		
		Protect egainst conventional	e de la marchia				
		Protect against neucleor					
		Protect against chemical	and the state of t				
		Protect against biological	A STATE THE STATE OF THE STATE	PARTY DESCRIPTION OF THE PROPERTY OF THE PROPERTY OF THE PARTY OF THE			Special EW capability
	Protect electronics against				completion		
	<u>.</u>	Protect against disruption	and the state of t				
		Protect agning Interception			AND THE PERSONS AND THE PERSON		The second secon
	Protect CSWS acapitat				P of inlation	Reduced valuerability	Enemy ground toward
					combigues		
	ground attack						
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			-				
7			-				

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SHEF

SHEF UNT	THREAT CONDITION		Enemy firepower				a, Albert	THE REAL PROPERTY AND PERSONS ASSESSMENT ASSESS	Yarget Density	24 Hour Operation																												~~~		
ij	OUTCOME	Reduced accident rate							Sustained Operation				•													Improved availability														
WORKSHEE	PERFORMANCE STANDARD						100%	100%																		MTBF	Induced failures	ММН		100% incipient	THIRING GENERALION	11 THE	MMH	MTBF	Inherent failures	100% incipient	tailure detection			
S ANALYSIS	IMPROVEMENT			Decrease	Decrease													Ouantity	Quantity							Increase	Decruase			Increase		Decrease	Decrease	Increase	Decrease	Increase				
FUNCTIONAL REQUIREMENTS ANALYSIS WORKSHEET.	MEASURE		Time	Time	Time		Accuracy	Accuracy					Volume	Time	Volume			Receive ammunition	Store ammunicion							Time: Frequency	Induced failures	Maint, mar hours	Accuracy	Failure identification	Time: outre		MMH	Frequency		Accuracy	Correct failure	detections		
SYSTEM FUNCTION	FUNSTIONAL ELEMENT			Detect fire	Extinguish fire		Check weepon sefety	Check target area safety					Receive POL		Store POL											Perform preventive	maintenanca				2.00	יש וטווו כטוופרווים	maintenance						Perform transportation	Services
TABLE A1-1. S	SYSTEM SUB-FUNCTION			Frotect CSWS against		Dropped profile colonia	Alaipt saliard topics				Supply Subsist. (Class 1)	Supply Misc. (Class III)				Supply mostruction (Class 1V)	VV see Of contrast A . 1	Supply Allender Control Colors		Supply Class VI	Supply Class VII	Supply Class VIII	Supply Class 1X		Perform Maintenance	services														
v	SYSTEM FUNCTION	Protect CSWS against hazardous conditions									Bridge Very Co.													Perform Services																
SYSTEM CSWS	FUNCTIONAL	OPERATE CSMS (cantinued)							200	SULTURE CAMP																													Ā	1

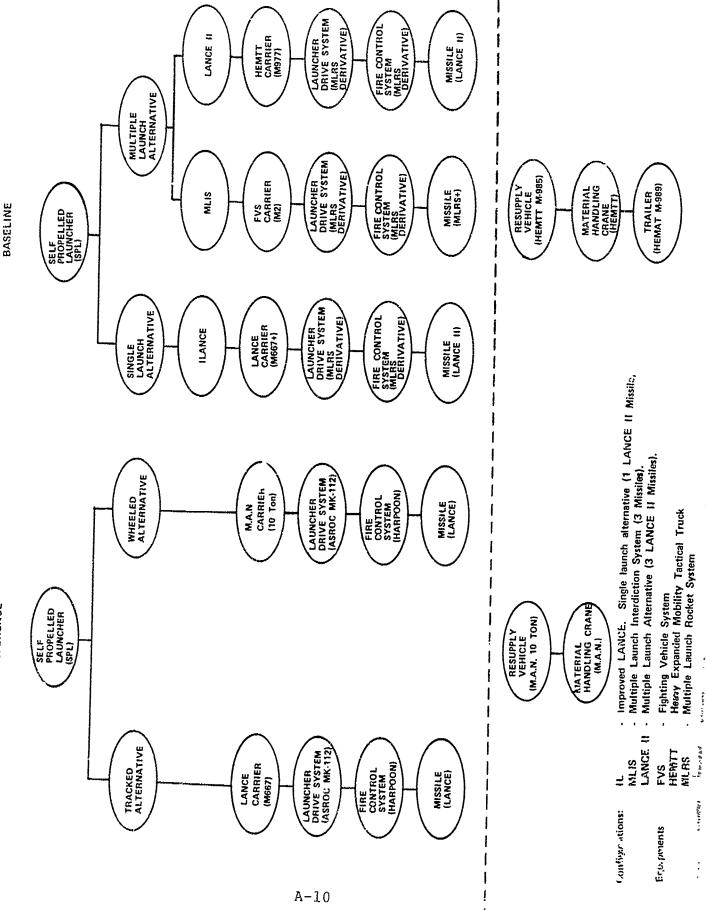
Sustained operation OUTCOME SYSTEM FUNCTIONAL REQUIREMENTS ANALYSIS WORKSHEET. P_RFORMANCE STANDARD IMPROVEMENT MEASURE Time FUNCTIONAL ELEMENT Perform personnel servicas Perform financial services Deploy system Tran: "ort system Perform food services
Perform laundry services
Perform training services
Develop force structure TABLE A1-1. Perform transportation services Perform administrative services SYSTEM SUB-FUNCTION Perform Services (continued) SYSTEM FUNCTION FIINCTIONAL SLPPORT CSMS (continued) SYSTEM CSWS

THREAT CONDITION

SHEET 7 of 7

Target dentity 24 hour operation APPENDIX A2
ENGINEERING ANALYSES

CSWS System Description. Figure A2.1. REFERENCE



44.40.20

the dear control of

Fullight Factor

APPENDIX A.2.2

Reference and Baseline Equipment Configuration Lists

Multiple Launch Rocket System

Table A2.2-1. Reference system Self-Propelled Launcher-Tracked Version (M752) (Lance 4667 Carrier)

Functional	
Group Code	System Subsystem Momenclature
01	Engine (Detroit Diesel 6V53/212HP)
0101	Engine Block
0102	Starter
0103	Lubricating System
0104	Air Induction System
0105	Engine Test Set (STE/ICE)
02	Not applicable

03	Fuel System
0301	Fuel Tank Assembly (85 gal.)
0302	Engine Fuel Pump
0303	ruel meater Assembly
0304	Governor

04	Lxhaust	pystem
0401	Exhaust	Manifold
0402	Murtler	

05	Cooling System
0501	Radiator
0502	Coolant Pump
0503	Surge Tank
0504	Coolant Heater Assembly (Cold Weather
	Starting)
0505	Transmission Oil Cooler
U6	Electrical System (24 volt)
0601	Alternator/Generator (Leece-Neville/100
	amp)
0602	Battery
0603	wiring Harness
U6U4	Lights
0605	Electrical Gauges & Indicators
0606	Electrical Switches
0607	Electrical Relays
υ608	Circuit Breakers
97	Transmission (Allison TX100-1)
υ 7 01	Torque Convertor
0702	Transmission Assembly
0703	Oil Filter and Screen

Haranaganah Haranaganah บช Transfer and Final Drive Assembly 1080 Transier Gearcase 0802 Power Take-Off Assembly 09 Shafts 0901 Propeller ... Propeller Shafts Final Drive Assembly 0902 10 Not Applicable Differential 11 1101 Right Angle Gearbox 1102 Oil Pump and Filter 1103 Oil Cooler 12 Not Applicable 13 Tracks 1301 Sprocket Drive 1302 Track Assembly 14 Steering System

Steering Unit

1401

15	Towing System
1501	Towing Hook and Pintel Assembly
16	Suspension System
1601	Torsion Bar
1602	Suspension Lock-out Cylinder
17	Not applicable
18	Hull Cap
1801	Windshield
1802	Rear Window
1803	Seats and Cushions
1804	Transmission Shift Lever
1805	Steering Brake Control Assembly
1806	Car and Power Plant Access Doors
1807	Personnel Heater System
1808	Instrument Panel
1809	Sump Pump
19	Not Applicable
20	Not Applicable
21	Not Applicable

22	Body Cnassis
2201	Frame Assembly
2202	Floor Places
2203	Swim Vanes
2204	Ramp
23	Environmental Control System
2301	Positive Pressure Equipment
2302	Personnel Protective Equipment
2303	Personnel Decontamination Equipment (MII,
	M13, M258)
2304	Fire Suppression System
	-
	·
24	Communications System
24 2401	
	Communications System:
2401	Communications System VHF-FM Radio Set (ARC-131)
2401 2402	Communications System: VHF-FM Radio Set (ARC-131) COMSEC VHF Unit (KY-28)
2401 2402 2403	Communications System: VHF-FM Radio Set (ARC-131) COMSEC VHF Unit (KY-28) Intercom Set (AIC-14)
2401 2402 2403	Communications System: VHF-FM Radio Set (ARC-131) COMSEC VHF Unit (KY-28) Intercom Set (AIC-14)
2401 2402 2403 2404	Communications System: VMF-FM Radio Set (ARC-131) COMSEC vMF Unit (KY-28) Intercom Set (AIC-14) Digital Data Communications Set (ASW-25)
2401 2402 2403 2404	Communications System: VHF-FM Radio Set (ARC-131) COMSEC VHF Unit (KY-28) Intercom Set (AIC-14) Digital Data Communications Set (ASN-25) Navigation System
2401 2402 2403 2404 25 2501	Communications System: VMF-FM Radio Set (ARC-131) COMSEC vMF Unit (KY-28) Intercom Set (AIC-14) Digital Data Communications Set (ASW-25) Navigation System Inertial Navigation Set (ASW-92)

C. Supply 1. R. J.

Allipsiostati, t

26	Missile Support Assembly (LAMCE)
2601	Rear Support Assembly
2602	Forward Support Assembly
2603	WHS Cradle Support Assembly
27	Not Applicable
28	Not Applicable
29	Not Applicable
30	Launch Fixture (LANCE)
3001	Base Frame Assembly
3002	Traverse Frame Assembly
3003	Launch 'fruss Assembly
31	Launcher Drive System (ASROC, MK-112)
3101	Not Applicable
3102	Not Applicable
3103	Receiver-Regulators
3104	Hydraulic System
3105	Manual Hydraulic Hand Pump
3106	Control and Power System
3107	Not Applicable

3110	Train and Elevate Air Drive Motors and
•	Lubricators
3111	Train and Elevate Bufrer Systems
32	Fire Control System (HARPOUN)
3201	Communications Processor (OW-79)
3202	Launch Control Set (SWG-1)
3223	Fire Control Unit
3205	Weapon Control Indicator Panel
3206	Abney Level
3207	Test Set Simulator (TS-3632)
33	Hissile Round (LANCE)
3301	Warhead Section
3302	Missile Main Assemblage
34	Missile Shipping and Storage Container
	(4599)
3401	Shell Assemblies
3402	Skids

representation.

Table A2.2-2. Reference System Selr Propelled Launcher-Wheeled Version (Maschinenfabrik Augsburg Nurnberg (M.A.N.) 10 Ton Carrier)

Functional Group Code System Subsystem Momenclature Ul Engine (Model D2840, V-10) 0101 Engine Block 0102 Starter 0103 Lubricating System 0104 Air Induction System 0105 Engine Test Set (STE/ICE) 02 Clutch (ZF 400) 0201 Clutch Assembly 03 Fuel System 0301 Fuel Tank Assembly (105 gal.)

0302

0303

0304

Engine Fuel Pump

Governor

Fuel Heater Assembly

04	Exhaust System
0401	Exhaust Manifold
0402	Muffler
05	Cooling system
0501	Radiator
U5U2	Coolant Pump
0503	Surge Tank
0504	Coolant ". ter Assembly
0505	Transmission/Converter Uil Cooler
06	Electrical System (24v)
0601	Alternator/Generator
0602	Battery (4 each, 12 volt)
0603	Wiring Harness
0604	Lights
0605	Electrical wauges and Indicators
0606	Electrical Switches
0607	Electrical Relays
0608	Circuit Breakers
0609	Trailer Electrical Connector Assembly
07	Transmission (ZF 45-150GP, 8-SPEED)
0701	Torque Convertor .

0702	Transmission Assembly
0703	Oil Filter and Screen
08	Transfer and Final Drive (ZP 150 GPA)
0801	Transfer Gearcase
0802	Power Take-Off Assembly
09	Shafts
0901	Drive Shaft Assembly
0902	Final Drive Assembly
10	Front Axle Assembly
1001	Differential
11	Rear Axle Assembly
1101	Differential
12	Brake System
1201	Service Brakes
1202	Parking Brakes
1203	Brake Drums
13	Wheels

Tires

1301

14	Steering System
1401	Power Steering Assembly
1402	eering Shatt
15	Towing System
1501	Towing Hook and Pintel Assembly
1502	Trailer Tow Assembly
16	Suspension System
1601	Spring Assembly (Coil)
1602	Shock Absorber Assembly
17	Not Applicable
18	Body and Cab
1801	Windshield
1802	Rear Window
1803	Seats and Cushions
1804	Transmission Shift Lever
1805	Brake Pedal Assembly
1800	Doors
1807	Heater and Ducting
1808	Instrument Panel
1809	Second Unit Body

,	19	Not applicable
; ;	20	Not Applicable
,	21	Not Applicable
	22	Body Chassis
•	2201	Fenders
2	2202	Bumpers
	2203	Stowage Compartment
	2204	Spare Tire Stowage Assembly
	2205	Service and Air Brake Connector
	2206	Slave Start Connector
3	23	Environmental Control System
•	2301	Positive Pressure Equipment
	2302	Personnel Protective Equipment
	2303	Personnel Decontamination Equipment
	2304	Fire Suppression System
	24	Communications System
	2401	VHF-FM Radio Set (ARC-131)
	2402	COMSEC Unit (KY-28)
	2403	Intercom System (AIC-14)
	2404	Digital Data Communications Set (ASW-25)

.25	Navigation System
2501	r ti-1 Wavigation Equipment (ASW-92)
2502	Attitude Meading Reference Equipment
	(ASN-107)
2503	Barometric Altimeter (AAU-19)
2504	Distance Transmitter Unit
26	Missile : apport Assembly (LANCE)
2601	Rear Support Assembly
2602	Forward Support Assembly
2603	WHS Cradle Support
27	Not Applicable
28	Not Applicable
29	Not Applicable
30	Launch Fixture (LANCE)
3001	Base Frame Assembly
3002	Traverse Frame Assembly
3003	Launch Truss Assembly

31	Launcher Prive System (ASRCC, MK-112)
3101	Not Applicable
3102	Not Applicable
3103	Receiver-Regulators
3104	Hydraulic System
3105	Manual Hydraulic Hand Pump
3106	Control and Power System
3107	Not Applicable
3108	Heating and Cooling System
3109	Not Applicable
3110	Train and Elevate Air Drive notors and
	Lubricators
3111	Lubricators Train and Elevate Burfer Systems
3111	
3111	
	Train and Elevate Burfer Systems
32	Train and Elevate Burfer Systems Fire and Control System (HARPOON)
32 3201	Train and Elevate Burfer Systems Fire and Control System (HARPOON) Communications Processor (OW-79)
32 3201 3202	Train and Elevate Burfer Systems Fire and Control System (HARPOON) Communications Processor (OW-79) Launch Control Set (SWG-1)
32 3201 3202 3203	Train and Elevate Burfer Systems Fire and Control System (HARPOON) Communications Processor (OW-79) Launch Control Set (SWG-1) Fire Control Unit
32 3201 3202 3203 3204	Train and Elevate Burfer Systems Fire and Control System (HARPOON) Communications Processor (OW-79) Launch Control Set (SWG-1) Fire Control Unit Casualty Panel (C-10277)

33	Missile Round (LANCE)
3301	Warhead Section
3302	Missile Main Assemblage
34	Missile Shipping and Storage Container
	(M599)
3401	Shell Assemblies
34/2	Skids

entherning.

Table A2.2-3. Reference System Resupply Venicle
(Maschinenfabrik Augsburg Nurnberg (M.A.N.) 10 Ton Truck)

Functional Group Code System/Subsystem womenclature 01 Engine (Model D2840, V-10) 0101 Engine Block 0102 Starter 0T03 Lubricating System 0104 Air Induction System 0105 Engine Test Set (STE/ICE) 02 Clutch (ZF 400) 0202 Clutch Assembl/ 03 Fuel System 0301 Fuel Tank Assembly (105 gal.) 0302 Engine Fuel Pump 0303 Fuel Heater Assembly 0304 Governor 04 Exhaust System 0401 Exhaust Manifold

Muffler

0402

05	Cooling System
0501	Radiator
0502	Coolant Pump
0503	Surge Tank
0504	Coolant Heater Assembly (Cold Weather
	Starting)
บุ5บ5	Transmission/Converter Oil Cooler
06	Electrical System (24V)
0601	Alternator/Generator
0602	Battery (4 each, 12 volt)
0603	Wiring Harness
u60 4	Lights
0605	Electrical Gauges and Indicators
U606	Electrical Switches
0607	Electrical Relays
0608	Circuit Breakers
0609	Trailer Electrical Connector Assembly
07	Transmission (ZF 4S-150GP, 8-SPEED)
0701	Torque Converter
0702	Transmission Assembly
0703	Oil Filter and Screen

Called and Called

08	Transfer and Final Drive (ZP 150 GPA)
1080	Transfer Gearcase
0802	Power Take-Off Assembly
09	Shafts
0901	Drive Shaft Assembly
0902	Final Drive
10	Front Axle Assembly
1001	Differential
11	Rear Axle Assembly
1101	Differential
12	Brake System
1201	Service Brakes
1202	Parking Brakes
1203	Brake Drums
13	Wheels
1301	Tires
14	Steering System
1401	Power Steering Assembly
1402	Steering Shaft

15	Towing System
1501	Towing Pintel Assembly
1502	Trailer Towing Assembly
16	Suspension System
1601	Spring Assembly (Coil)
1602	Shock Absorber Assembly
17	Not Applicable
18	Body and Cab
1901	Windshield
1802	Rear Window
1803	Seats and Cushions
1804	Transmission Shift Lever
1805	Brake Pedale Assembly
1806	Doors
1807	Heater and Ducting
1808	Instrument Panel
1809	Second Unit Body
19	Not Applicable

20	Winch and Crane System
2001	Material Handling Crane (8-ton)
2002	Hydraulic Power Package Assembly
21	Not Applicable
22	Body Chassis
2201	Fenders
2202	Bumper
2203	Stowage Compartment
2204	Spare Tire Stowage Assembly
2205	Service and Air Brake Connector
2206	Slave Start Connector
	•
23	Environmental Control System
2301	Positive Pressure Equipment
2302	Personnel Protective Equipment
2303	Personnel Decontamination Equipment
2304	Fire Suppression System
24	Communications System
2401	VHF-FM Radio Set (ARC-131)
2402	COMSEC Unit (KY-28)
2403	Intercom Set (AIC-14)

25 Not Applicable

26 Missile Support Assembly (Note 1)

2601 Rear Support Assembly

2602 Forward Support Assembly

2603 WHS Cradle Support Assembly

NOTES:

Required on the RSV pecause the missile carried on the RSV will be uncanistered, fully assembled, ready-to-fire rounds.

Table A2.2-4. Baseline System Self-Propelled Launcher (Tracked Version - Improved Lance)

Functional

Group Code	System/subsystem Nomenclature
01	Engine (Detroit Diesel 6V53)
U101	Engine Block
0102	Starter
0103	Lubricating System
0104	air Induction System
0105	Engine Test Set (STE/ICE)
02	Not Applicable
03	Fuel System
0301	ruel Tank Assembly (85 gal.)
0302	Engine Fuel Pump
0303	Fuel meater Assembly
0304	Governor
04	Exnaust System
0401	Exhaust Manifold
0402	Muttler

05	Cooling System
0501	Radiator
0502	Coolant Pump
υ503	Surge Tank
0504	Coolant neater Assembly (Cold weather
	Starter)
0505	Transmission Oil Cooler
06	Electrical System (24V)
0601	Alternator/Generator (Leece-Neville 100
	amp)
0602	Battery
0603	Wiring Harness
0604	Lights
0605	Electrical Gauyes and Indicators
0606	Electrical Switches
0607	Electrical delays
U608	Circuit Breakers
0609	Not Applicable
0610	Diagnostic Connector Assembly (STE/ICE)
07	Transmission (Allison TX-100-1)
0701	Torque Converter
0702	Transmission Assembly
0703	Oil Filter and Screen

80	Transfer and Final Drive Assembly
0801	Transfer Gearcase
0802	Power Take-Off Assembly
09	Shafts .
0901	Propeller and Propeller Shatts
0902	Final Drive Assembly
10	Not Applicable
11	Differential
1101	Right Angle Gearbox
1102	Oil Pump and Filter
1103	Oil Cooler
12	Not Applicable
13	Tracks
1301	Sprocket Drive
1302	Track Assembly
14	Steering System
1401	Steering Unit

Steering Unit

15	Towing System
1501	Towing Hook and Pintel Assembly
16	Suspension System
1601	Torsion Bar
1602	Suspension Lock-Out Cylinder
17	Not Applicable
18	Hull Cab
1801	Windshield
1802	Rear Window
1803	Seats and Cushions
1804	Transmission Shift Level
1805	Steering Brake Control Assembly
1806	Cab and Power Plant Access Doors
1807	Personnel Heater System
1808	Instrument Panel
1809	Sump Pump
19	Not Applicable
20	Not Applicable

21	Not Applicable
22	Body Chassis
2201	Frame Assembly
2202	Floor Plates
2203	Swim Vanes
2204	камр
23	Environmental Control System
2301	Hybrid Collective Protection Equipment
	(HCPE)
2302	Personnel Protective Equipment
2303	Personnel Decontamination Equipment (MII,
	M13, M250)
2304	Fire Suppression System (Halon 1301)
24	Communications System
2401	VHF-FM Radio Set (SINCGARS, VRC-()4)
2402	COMSEC Unit (Vandal, KYV-4)
2403	Intercom Set (VIC-1)
2404	Digital Data Communications Set (PLRS,
	VSQ~1)
25	Navigation System
	-

Inertial Navigation Set (USQ-70)

2502	Attitude Heading Reference Set (LR-80)
2503	Not Applicable
2504	Distance Transmitter Unit
26	Missile Support Assembly (LANCE)
2601	Rear Support Assembly
2602	Forward Support Assembly
2603	WHS Cradle Support Assembly
27	Not Applicable
28	Not Applicable
29	Not Applicable
30	Launch Fixture (LANCE)
3001	Base Frame Assembly
3002	Traverse Frame Assembly
3003	Launch Truss Assembly
31	Launcher Drive System (MLRS Derivative)
3101	Not Applicable
3102	Not Applicable
3103	Position Monitors
3104	Hydraulic System

3105	Manual Back-Up System
3106	Power System
3107	Power Distribution Box
3108	Heat Exchanger
32	Fire Control System (MLRS Derivative)
3201	Communications Processor
3202	Electronics Unit
3203	Fire Control Unit
3204	Remote Fire Unit
3205	Fire Control Panel
3206	Abney Level
3207	Short-No Voltage Tester
3208	Test Set-Simulator (Organizational)
3209	Test Set-Simulator (Direct Support)
3210	Maintenance Kit (Organizational)
3211	Maintenance Kit (Direct Support)
33	Missile Round (LANCE [[])
3301	Warhead Section
3302	Missile Main Assemblage
34	Missile Canister (Shipping and Storage)
3401	End Closures
3402	Storage Tube
3403	Shock Mitigating System
3403	Lift Mechanism

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Table A2.2-5. Baseline System Selt-Propelled Launcher (Tracked Version - Multiple Launch Interdiction System)

Functional

Group Code	System/Subsystem Momenclature
0.3	
01	Engine (Cummins - VTA 903)
0101	Engine Block
0102	Starter
0103	Lubricating System
0104	Air Induction System (2 stage)
02	Not Applicable
03	Fuel System
0301	Fuel Tank (175 gallons)
0302	Engine Fuel Pump
0303	Fuel Heater Assembly
0304	Governor
04	Exhaust System
0401	Exhaust Manifold
0402	Muffler

05	Cooling System
0501	Radiator
0502	Coolant Pump
0503	Expansion Tank
0504	Coolant Heater Assembly (Cold Weather
	Starting)
0505	Transmission Oil Cooler
06	Electrical System (12 volt)
0601	Alternator/Generator (220 amp)
U602	Battery (4 each, 100 amp)
0603	Wiring Marness
0604	Lights
0605	Electrical Gauges and Indicators
U6U6	Electrical Switches
0607	Electrical Relays
0608	Circuit Breakers
0609	Not Applicable
0610	Diagnostic Connector Assembly (STE/FMC)
07	Transmission (DDA &300-6)
0701	Torque Convertor
0702	Transmission Assembly
0703	Oil Filter and Screen

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0੪	Transfer and Final Drive
0801	Transfer Gearcase
0802	Power Take-Off Assembly
09	Driveline/Shafts
0901	Drive Shaft Assembly
0902	Final Drive Assembly
10	Not Applicable
11	Not Applicable
12	Brake System
1201	Service Brakes
1202	Parking Brakes/ Hand Brakes
13	Tracks
1301	Roadwheel Assembly
1302	Shock Absorber Assembly (4 each per side
1303	Track Shoes (83L, 82R)
	•
14	Steering System

Steering Unit

15	Towing System
1501	Towing Pintel Assembly
16	Suspension System
1601	Spring Assembly
1602	Linear Shock Assembly
1603	Disk Brake Suspension (Lock-Out)
1604	Integrated Hydraulic Actuator
1605	Rear Idler Wheel
1606	Return Roller Suspension
17	Not Applicable
18	Hull
1801	Windshield (W/Louvered Armor)
1802	Not Applicable
1803	Seats and Cushions
1804	Transmission Shift Lever
1805	Steering Brake Control Assembly
1806	Cab and Power Plant Access Door
	Assemblies
1807	Personnel Heater System
1808	Instrument Panel

19

Not Applicable

20	Not Applicable
21	Not Applicable
22	Body Chassis
2201	Frame Assembly (Front and Rear)
2202	Floor Plates
23	Environmental Control System
2301	Hybrid Collective Protection System
	(HCPE)
2302	Personnel Protective Equipment
2303	Personnel Decontamination Equipment (MII,
	M13, M258)
2304	Fire Suppression System (Halon 1301)
	•
24	Communications System
2401	VHF-FM Radio Set (SINGARS, VRC-C)4)
2402	COMSEC Unit (vandal, xYV-4)
2403	Intercom Set (VIC-1)
2404	Digital Data Communications Set (PLRS,
	VSQ-1)

25	Navigation System
2501	Inertial Navigation Set (USQ-70)
2502	Attitude heading Reference Set (LR-80)
2503	Not Applicable
2504	Distance Transmitter Unit
26	Not Applicable
27	Not Applicable
28	Not Applicable
29	Not Applicable
30	Launch Fixture
3001	Base Assembly
3002	Not Applicable
3003	Turrer Assembly
3004	Canister Launcher Platform
3005	Missile Canisters
31	Launcher Drive System (MLRS Derivative)
3101	Not Applicable
3102	Not Applicable
3103	Position Monitor

3104	Hydraulic System
3105	Manual Back-Up System
3106	Power System
3107	Power Distribution Box
3108	Heat Exchanger
32	Fire Control System (MLRS Derivative)
3201	Communication Processor
3202	Electronic Unit
3203	Fire Control Unit
3204	Remote Fire Unit
3205	Fire Control Panel
3206	Abney Level
3207	Short-No Voltage Tester
3208	Test Set-Simulator (Organization) (Not on
	SPL)
3209	Test Set-Simulator (Direct Support) (Not
	on SPL)
3210	Organization Level Card Caddy Maint. Kit
	(Not on SPL)
3211	Direct Support Level Card Caddy Maint.
	Kit (Not on SPL)

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Table A2.2-6. Baseline System Self-Propelled Launcher (Wheeled Version - LANCE II)

Functional Group Code System/Subsystem Nomenclature Ţ Engine (DDA 8V92TA) 0101 Engine Block (736 in3) 0102 Starter 0103 Lubricating System 0104 Air Induction System 01u5 Engine Test Set (STE/ICE) 02 Clutch 0201 Clutch Assembly 03 Fuel System 0301 Fule Tank Assembly (100 galion)

Engine Fuel Pump

Governor

Fuel Heater Assembly

0302

0303

04	Exhaust System
0401	Exhaust Manifold
0402	Mutfler
05	Cooling System
U5U1	Radiator (Heavy Duty)
U5U2	Coolant Pump
0503	Surge Tank
0504	Coolant Heater Assembly (Cold Weather
	Starting)
U5U5	Transmission/Convertor Oil Cooler
06	Electrical System (24V)
0601	Alternator/Generator (62 amp)
0602	Battery (4 each, 12 volt)
0603	
	Wiring Harness
0604	Wiring Harness Lights
0604 0605	-
	Lights
0605	Lights Electrical Gauges and Indicators
0605 7606	Lights Electrical Gauges and Indicators Electrical Switches
0605 ,606 0607	Lights Electrical Gauges and Indicators Electrical Switches Electrical Relays
0605 0606 0607 0608	Lights Electrical Gauges and İndicators Electrical Switches Electrical Relays Circuit Breakers

07	Transmission (Allison mr740D)
U701	Torque Convertor
0702	Transmission Assembly
0703	Oil Filter and Screen
08	Transfer and Final Drive Assembly (8x8)
1080	Transfer Gearcase (Oshkosh 55000-Two
	Speed)
0802	Power Take-Off Assembly
09	Shafts
0901	Drive Shaft Assembly
0902	Final Drive Assembly
10	Front Axle Assembly (Oshkosh 46K)
1001	Differential (GAWR 30,000 lbs, Ratio
	4.57:1)
11	Rear Axle Assembly (Eaton DS-381)
1101	Differential (GAWR 30,000 lbs, Ratio
	5.43:1)
12	Brake System (Dual Air)
1201	Service Brakes

Parking Brakes

1203	Brake Drums
13	Wheels
1301	Tires (16.00R20)
14	Steering System
1401	Power Steering Assembly
1402	Steering Snaft
15	Towing System
1501	Towing Pintel Assembly
16	Suspension System (Hendrickson RT 340)
1601	Spring Assembly - With Equalizing Beams
1602	Shock Absorber Assembly
17	Not Applicable
18	Body and Cap
1801	Windshield
1802	Rear Window
1803	Seats and Cushions
1804	Transmission Shitt Lever
1805	Brake Peddle Assembly

1806	Doors
1807	Heater and Ductiny
1808	Instrument Panel
19	Not Applicable
20	Not Applicable
21	Not Applicable
22	Body Chassis (GVWR 00,000 los)
2201	Fenders
2202	Bumpers
2203	Stowage Compartment
2204	Spare Tire Stowage Assembly
2205	Service and Air Brake Connectors
2206	Slave Start Connector
2207	Frame Assembly (.375 in)
23	Environmental Control System
2301	Hybrid Collective Protection Equipment
	(HCPE)
2302	Personnel Protective Equipment

2303	Personnel Decontamination Equipment (MII,
	M13, M258)
2304	Fire Suppression System (Halon 1301)
24	Communications System
2401	VHF-Fri Radio Set (SINCGARS, VRC-()4)
2402	Comsec Unit (Vandal, KYV-4)
2403	Intercom Set (VIC-1)
2404	Digital Data Communications Set (PLRS,
	VSQ-1)
25	Navigation System
2501	Inertial Navigation Set (USQ-70)
2502	Attitude Heading Reference Set (LR-80)
2503	Not Applicable
2504	Distance Transmitter Unit
26	Not Applicable
27	Not Applicable
28	Not Applicable
29	Not Applicable

30	Launch Fixture (HARPOON Derivative)
3001	Base Frame Assembly
3002	Not Applicable
3003	Turret Assembly
3004	Canister Launch Platform
31	Launcher Drive System (MLRS Derivative)
3101	Hot Applicable
3102	Not Applicable
3103	Position Monitors
3104	Hydraulic System
3105	Manual Back-Up System
3106	Power System
3107	Power Distribution Box
3108	Heat Exchanger
32	Fire Control System (MLRS Derivative)
3201	Communications Processor
3202	Electronic Unit
3203	Fire Control Unit
3204	Remote Fire Unit
3205	Fire Control Panel
3206	Abney Level
3207	Short-No Voltage Tester
3208	Test Set Simulator (Organizational)

3209	Test Set Simulator (Direct Support)
3210	Maintenance Kit (Organizational)
3211	Maintenance Kit (Direct Support)
23	Missile Round (LANCE II)
3301	Warhead Section
3302	Missile Main Assemblage
34	Missile Canister
3401	End Closures
3402	Launch Tube
3403	Shock Mitigating System
3404	Lift Mechanism

Table A2.2-7. Baseline System Resupply venicle (Heavy Expanded Mobility Tactical Truck (HEMTT) M985)

Functional Group Code System/Subsystem Nomenclature ΟŢ Engine (Detroic Diesel 3V92TA) 0101 Engine Block (736 in3) U102 Starter 0103 Lubricating System 0104 Air Induction System 0105 Engine Test Set (STE/ICE) 02 Clutch 0201 Clutch Assembly 03 Fuel System 0301 Fuel Tank (100 gallon) 0302 Engine Fuel Pump 0303 Fuel heater Assembly 0304 governor 04 Exhaust System 0401 Exhaust Manifold

Muffler

05	Cooling System
0501	Radiator (HD)
0502	Coolant Pump
0503	Surge Tank
0504	Coolant Heater Assembly (Cold Weather
	Starting)
0505	Transmission/Convertor Oil Cooler
06	Electrical System (24 volt)
0601	Alternator/Generator (62 aup)
0602	Battery (4 each, 12 volt)
0603	Wiring Harness
0604	Lights
0605	Electrical Gauges and Indicators
U6U6	Electrical Switches
0607	Electrical Relays
0 6 08	Circuit Breakers
0609	Trailer Electrical Connector Assembly
0610	Diagnostic Connector Assembly (STE/ICE)
07	Transmission (Allison HT74UD)
0701	Torque Converter
0702	Transmission Assembly
0703	Oil Filter and Screen

08	Transfer and Final Drive Assembly (8x8
0801	Transfer Gearcase (Oshkosh 55000 Two
	Speed)
0802	Power Take-Off Assembly
09	Shafts
0901	Drive Shaft Assembly
0902	Final Drive Assembly
10	Front Axle Assembly (Oshkosh 46K)
1001	Difrerential (GAWR 13,500 kg)
11	Rear Axle Assembly (Eaton DS-381)
1101	Differential (GAWR 13,500 kg)
12	Brake System (Dual Air)
1201	Service Brakes
1202	Parking Brakes
1203	Brake Drums
13	Wheels

Tires (16.00R 20x8)

14	Steering System
1401	Power Steering Assembly
1402	Steering Shaft
15	Towing System
1501	M989 Trailer Tow Assembly
16	Suspension System (Hendrickson RT 340)
1601	Spring Assembly
1602	Shock Absorber Assembly 17
	Not Applicable
18	Body and Cab
1801	Windshield
1802	Rear Window
1803	Seats and Cushions
1804	Transmission Shift Lever
1805	Brake Peddle Assembly
1806	Doors

19 Not Applicable

1807

1808

1809

Heater and Ducting

Instrument Panel

Second Unit Body

20	Winch and Crane System
2001	Material Handling Crane
2002	Hydraulic Power Package Assembly
2003	Recovery Unit
21	Not Applicable
22	Body Chassis (GVWR 60,000 lbs.)
2201	Fenders
2202	Builper
2203	Stowaye Compartment
2204	Spare Tire Stowage Assembly
2205	Service and Air Brake Connector
2206	Slave Start Connector
2207	Frame Assembly (.375 in)
23	Environmental Control System
2301	Hybrid Collective Protection Equipment
	(HCPE)
2302	Personnel Protective Equipment
2303	Personnel Decontamination Equipment
2304	Fire Suppression System (Halon 1301)

24	Communications System
2401	VHF-FM Radio Set (STNCGARS, VRC-()4)
2402	COMSEC Unit (vandal, KY4)
2403	Intercola Set (VIC-1)
25	Not Applicable
26	Missile Support Assembly (Note 1)
2601	Rear Support Assembly
2602	Forward Support Assembly
2603	WHS Cradle Support Assembly

NOTE:

1. Required only on the HEMTT and HEMAT for the single launch alternative (ILANCE) because the missiles carried on the RSV and trailer will be uncanistered, rully assembled, ready-to-tire rounds. Not required on the multiple launch alternatives.

Table A2.2-8. Auxiliary Trailer (Heavy Expanded Mobility Ammunition Trailer (Hemat) - M989)

Functional

Group C:de	System/Subsystem Nomenclature
01	Not Applicable
02	Not Applicable
03	Not Applicable
U 4	not olicable
05	Not Applicable
06	Electrical System
0601	Not Applicable
0 602	Not Applicable
0603	Wiring System
0604	Lights
J7	Not Applicable

បម	Not Applicable
09	Not Applicable
10	Front Axle, Rear Axle
12	Brake System
1201	Service Brakes
1202	Parking Brakes
1203	Brake Drums
13	Wheels
1301	Tires
14	Not Applicable
15	Towing System
1501	Towing Pintel Assembly
16	Suspension System
1601	Spring Assembly
1602	Shock Absorber Assembly
	•
17	Not Applicable
	· · · · · · · · · · · · · · · · · · ·

18	Not Applicable
19	Not Applicable
20	Not Applicable
21	Not Applicable
22	Chassis/Frame
2201	Not Applicable
2202	Rear Bumper
2203	Not Applicable
2204	Spare Tire Stowage Assembly
∠20 5	Service and Air Brake Connector
23	Not Applicable
24	Not Applicable
25	Not Applicable
26	Missile Support Assembly (Note 1)
2601	Rear Support Assembly
2602	Forward Support Assembly
2603	WHS Cradle Support Assembly

NOTES:

1. Required on the HEMAT for the single launch alternative because the missiles carried on this trailer will be uncanistered, fully assembled, ready-to-fire rounds. Not required on the multiple launch alternatives.

APPENDIX A2.3

SAMPLE EQUIPMENT ANALYSIS WORKSHEETS

The Equipment Analysis worksneets contained in this Appendix are samples from actual working documents derived by this study's engineering analyses and used to support the manpower analysis. Equipment lists were created from source documentation for the reference and baselines systems. The "Engineering Design Comparability Analysis" worksheets, (Table A2.3-1) are generated to assist in the analytic evaluation of the reference and the baseline systems (fielded vs conceptual). These worksheets are organized to facilitate their use in explaining RAM-D differences and are used in the training discipline to identity those areas where required skills vary from reference to baseline systems. The "RAM Data" worksheets (Table m2.3-2) contain summary calculations and source data figures utilized in computing manpower demands for both scheduled (PM) and unscheduled (CM) maintenance. RAM Data worksheets are generated for each reference and baseline system. RAM data is broken down to at least a subsystem level to facilitate identifying high drivers among the engineering parameters for tradeoff analysis. The Equipment Analysis worksheets also serve as a basis for making engineering judgements.

Table A2.3-1. Sample Design Differences Worksheet.

ENGINEERING DESIGN COMPARABILITY ANALYSIS

		ENGINEERING	ENGINEERING DESIGN COMPARABILITY ANALYSIS	ARABILITY ANA	LYSIS		WHEELED CARRIER
FGC	NOMENCLATURE	REFERENCE DESIGN	BASELINE DESIGN	DIFFERENCES	IMPACT	SOURCE	REMARKS
· ·	Ring i ne	10 Ton M.A.N. Model D2840 10 Cylinder 401 BHP (# 2300 NPM)	HEMTT 10-Ton (XM 977) DDA 8V9ZTA 8 Cylinder 445 BHP 736 in ³ displacement	Ref, engine under powered for required loading	Oil seals failed. Ref. engine was modified with a larger oil holding tank to complete the test.	½, <u>2</u> / <u>3</u> /	Mode 1 - Modifications to the ref vehicle were made in thu interest of testing a more representative vehicle for the illerr
٠ <u>٠</u>	Cooling System	Liquid Cooled	Radiator Core-Fin + Tube type 1730 in2, air surface, gear driven centrifugal water pump, built -in deceleration system. 32* Fan - 8 blade, dual belt driven.	See Note 2		£ 73	Detailed design specs were unavailable, however, a HEMYT feasibility test study was accomplished at APG on the 10 ton M.A.N. model. The tested design was detimed to represent the operating characteristics to be used on HEMYT are current production parts and do not represent sent any high reliability risks.
					 AMSAA M.A.R. BAM OSHKOSH Truck Cofpx TW9-2320-xxx-10 	AMALYSIS TO TECOM Ltion Spec. Chart.	dtd. 12/79.

A STATE OF THE PARTY OF THE PAR

THE R. LEWIS CO., LANSING, SAN, LANSING, SAN

AN ASSESSMENT OF THE PARTY OF T

Table A2.3-1. (Continued).

ENGINEERING DESIGN COMPARABILITY ANALYSIS

		ENGINEERING	ENGINEERING DESIGN COMPARABILITY ANALYSIS	RABILITY ANA	LYSIS		MIEELED CARRIER A. 2 of 3
FGC	NOMENCLATURE	REFERENCE DESIGN	BASELINE DESIGN	DIFFERENCES	IMPACT	SOURCE	REMARKS
3 6	Electrical System	24 Volt System	62 Amp Alt. 24 Volt System (4) - 12 Volt batteries.	See Note 2.		F F	See Note 2.
6	Transmission	Modified with heavy duty, 4-speed 2 range transfer (8 Speed) EF 48-150 GP	Allison MT740D 4-speed automatic with totque converter	Transmission shifting Characteristics	Not known, but base- line would histori- cally have more con- venient handling characteristics, how- ever the reference system would require less total mainte- nance.	<u>1</u> , <u>2</u> / <u>3</u> /	See Note 1
8 0	Transfer Case	Two-speed 2F 150 GPA	Oshkosh 55000 two-speed air operated, W/front tandum disconnect.	See Note 2.		Æ 72	See Mote 2
60	Shafts	Drive Shafts Coupling Shafts	Propeller Shaft Coupling Shaft	Baseline has a larger diameter driveline (propeller shaft) The ref. system in-jo'nt couplings were designed for lover GVMR and fractured under the additional stress.	Ref. denign evmri- enced a high failure rate during reli- ability testing.	\varepsilon \text{\varepsilon} \varepsilon	See Notes 1 + 2
10	Front and rear axles	All axles are drive axles	Oahkosh 46K 5.57: 1 ratio GANR: 30,000 lbs. 30 front turning angle. Single reduction, single cardan joint, closed type steering ends.		. <u></u> -		·

Table A2.3-1. (Continued). ENGINEERING DESIGN COMPARABILITY ANALYSIS

		ENGINEERING DESIG	DESIGN COMPA	N COMPARABILITY ANALYSIS	LYSIS	-	WIEELED CARRIER
FGC	NOMENCLATURE	REFERENCE DFSIGN	BASELINE DESIGN	DIFFERENCES	IMPAGT	SOURCE	REMARKS
73	Stake Systes	Front - Air Over hydraulic Rear - Air operated	Internal Shoe Dual Bystem Air Operated			/£ / z	See Mote 2.
13	Whee Is		20.00 x 10.00 Steel disk			75	See Note 2.
1301	Tires	Tube type	Tube type Radial traction 16.00 R 20	Wone	None	¥. 3/	
**	Steering System	Necirculatory ball power assist	Integral hydraulic gears main and booster;			2/. 3/	
*	Suspension Systes	Coll Apring at each wheel, Telescopic adjustable shocks each wheel,	Hendrikson NT 340 Leaf springs, steel saddle equalizing bess	Leaf springs maintain their operating characteristics longer under heavy loading and rough terrain	Higher failure rate for the ref. system shocks and mprings	√£ ½ √₹.	If the ref. system could be brought up to spec. GVMR with coil springs, it would be a favorable maneuverability tradeof
1809	Second Unit Body		216" cargo body			/£ /z	See Note 2.
2207	Framerail assembly	Welded box frame	-375 in rails, formed channel bolted construction w/grade 8 bolts	Cannot be de erained			See Note 2. The HEMTT frame, spec, would suggest the minimal strength for
						المادين المادي المادين المادين المادي	under no conditions would less than grade-it bolts be acceptable
		·					for quesact frices member support. They would sheer under the stress of proposed terrain and a definite degraded

dissentant in the

Communication (1)

Approximation (

Table A2.3-2. RAM Analysis Worksheet.

System: Reference - Wheeled Carrier (M.A.N. 10-Ton).

-				COR	CORRECTIVE MAINTENACE	AINTENACE		PREVENT	PREVENTIVE MAINTENANCE	renance
#4	FGC	SUBSYSTEM	USE/ PERIOD	MA/ USE	MMH/ MA	MTTR	MR	CREW	ORG	DS
	01	Engine	1000 Operating Hours	74	0.558	0.361	0.041	0.0	3.0	5.8
J	03	Fuel System	Ξ	σ	0.519	0.486	0.004	0.3	1.9	1.5
A-1	04	Exhaust System	£		*	•	1	0.0	0.2	0.0
	05	Cooling System	2	1	;	į	!	6.3	1.0	0.0
J	90	Electrical System	Ξ	23	0.445	0.445	0.010	1.3	5.0	2.0
3	07	Transmission	=	œ	10.133	5.144	0.037	0.0	4.5	1.1
5	80	Transfer and Final Drive Assembly	=	н	1.000	1.000	0.000	!	: !	i
0	60	Shafts	=	1	2.000	1.000	0.001	0.0	0.4	0.0
~	10	Front Axle	=	9	5.293	2.936	0.030	0.3	1.3	0.0
г	11	Rear Axle	=	7	5.100	3.300	900.0	0.3	6.0	0.0
H	12	Brake System	5	10	1.924	1.056	0.019	0.1	J.5	0.0

Table A2.3-2. (Continued).

			CORRECT	CORRECTIVE MAINTENANCE	SNANCE		PREVEN	PREVENTIVE MAINTENANCE ¹	ENANCE 1
FGC	SUBSYSTEM	USE/ PERIOD	MA/ USE	MMH/ MA	MTTR	MR	CREW	ORG	DS
13	Wheels	1000 Operating Hours	19	2.862	1.791	0.052	0.1	0.2	2.5
14	Steering System	=	ស	1.585	0.946	850	c	r	,
15	Towing System	=	4	3,342	2.250		•	7 • 7	0 • 0
16	Suspension System	z	ر. در		0 0	700.0	1 1	i	1
18	Body & Van	2	n T	U.845	0.533	0.011	0.0	0.3	0.0
,		:	9	1.887	1.100	0.011	0.5	0.1	0.0
7	body Chassis	Ξ	4	0.600	0.600	0.002	0.1	1.0	0
-	Other	=	7	0.467	0.467	0.001	!	· ·))
!	TOTAL	=	177	1.3	6.0	0.235	3.3	22.4	12.9

- 4,7,5

^lPm extracted from M.A.N. MAC chart in TM 9-2320-20 with TM 9-2320-282-10 no available, therefore no further breakdown of PM numbers other than these totals as periodic requirements.

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APPENDIX A3
DATA SOURCES INDEX

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APPENDIX A3 DATA SOURCES INDEX

FUNCTIONAL AREA: MISSION

CATEGORY

DATA

SOURCE

COMMENTS

l. Need

Threat

DARCOM: Threat Organization

Description

Tactics, and Equipment

TRADUC: Battlefield

Development Plan

2. Capabilities Functional

TRADUC: Fire

Requirements Support Mission Area Analysis

(MAA) Phases 1 and 2

TRADOC: CSWS Special Task

Force Briefing

TRADUC: FM 6-40-4, Field

Artillery Lance Misisle

Gunnery

CATEGORY

DATA

SOURCE

COMMENTS

TRADOC: ARTEP 6-595 The Field Artillery Batallion

Lance

Operational

TRADUC: CSWS

Concepts

Special Task Force; Initial Corps Support Weapon System Operational and Organizational Plan (O&O

Plan)

TRADOC: FM 525-5, Military
Operations, Operational
Concepts for the Airland
Battle and Corps Operations
1986

TRADOC: Field Artillery
School; Organizational and
Operational Concepts for an
Improved Fire Support C3
System

FUNCTIONAL AREA: DESIGN

CATEGORY

DATA

SOURCE

COMMENTS

l. Missiles

Design/RAM

U.S. Army Material Readiness
Support Activity, Lexington,
Kentucky

U.S. Army Test & Evaluation Command, Aberdeen Proving Grounds, Maryland

U.S. Army Armament Material Readings Command, Rock Island, Illinois

U.S. Army Material Systems
Analysis Activity, Aberdeen
Proving Grounds, Maryland

U.3. Army Missile Command,
Redstone Arsenal, Huntsville,
Ala.

Vought Corporation, Grand
Prairie, Texas

AR 220-1 Unit Status
Reporting (Missile Readiness)

2. Vehicle Design/RAM

U.S. Army Tank-Automotive
Command Warren, Michigan 10
Ton M.A.N.

FMC Corporation San Jose, California

Army Material Systems

Analysis Activity A.P.G.

Aberdeen Proving Grounds,

Maryland

Vougnt Corporation Grand
Prarie, Texas M2

CAT	'EGORY	DATA	SOURCE	COMMENTS
3.	Protective Systems	Design/RAM	U.S. Army Chemical Systems Laboratory Aberdeen Proving Grounds, Maryland	
4.	Navigation Systems	Design/RAM	RAM Summary NAMSO Report #4790A7142-01 Navy	

5. Communication Design/RAM TRADOC: Systems Managers
Offices Ft Gordon, GA

TRADOC: Systems Managers
Office/PLRS Ft. Gordon, GA

Maintenance Support Office

Mechanicsburg, PA

TRADUC: FM 24-24 Radio and Radar Reference Data

R&M Summary NAMSO Report #4790A7142-01 Navy Maintenance Support Office Mechanicsburgh, VA

CATEGORY	DA'TA	SOURCE	Comments
6. Fire Control	Design/RAM	NAVY: DD-963 class HARPOON	

Weapon System Naval Sea

Systems Command, Washington,

DC

7. Baseline Improved LANCE Concepts

Multiple Vought Corporation

Launch Grand Prarie, Texas Corps

Interdiction Support Weapon System Concept

System (MLIS) Definition: Multiple Launch
Interdiction System (MLIS):

Volume II Technical (Secret)

LANCE II Vought Corporation: Grand

Prarie, Texas Corps Support

Weapon System Concept

Definition; LANCE II; Volume

II Technical (Secret)

FUNCTIONAL AREA: MANPOWER

CATEGORY

DATA

SOURCE

CATEGORY

1. Workload

Maintenance NAVY: Navy Maintenance Data

Collection System

NAVY:

Weapons Quality Engineering

Center, Concord, CA (WQEC)

Maintenance Data System

TRADOC: Ft. Lee, VA Updated Log Center

MACRIT File

U.S. Army Material Readiness Support

Activity; MACRIT Master Data File

SB 700-20

Used to obtain line item number for

extracting MACRIT data.

2. Methodology Constraints

AR 570-2 Manpower Authorization Criteria

(MACRIT)

Allowances

AR 570-2 Manpower Authorization Criteria

(MACRIT)

Capabilities CDB/DRC mission Profile tor CSWS

FUNCTIONAL AREA: TRAINING

CATEGORY	DATA	SOURCE	COMMENTS
l. Task Require- ments		Individual Tasks Accomplished By MOS/Skill Level Trainer's Guides Soldiers Manuals	
	Collective Tasks	ARTEP (Army Training and Evaluation Program)	
2. MOS/Skill Levels	MOS/Skill Level Descriptions and Career Management Fields	AR 611-201 (Enlisted Career Management Fields and Military Occupational Specialties)	
3. Course Outlines	-	U.S. Army Formal Schools Catalog, DA PAM 351-4 Individual Service Schools, Programs of Instruction	

CATEGORY	DATA	SOURCE
	Training Paths	Military Occupational Specialty Training Cost Handbook (MOSB)
4. Course Information		Individual Service Schools TRADOC Form 377-1-R
	Student Instructor Ratio	TRADOC Form 377-1-R or TRADOC CIR 351-12 DA PAM 370-588
	Course: Statistical Intornation	•

INCOES 1POI and AR 611-201

Courses and

Course Pre-

requisites

COMMENTS

A-83

C# (UGORY	DATA	SOURCE	COMMENTS
5	Training	List and	Individual Service School and	
	Devices	Description	DA PAM 310-12 (Index and	
		current Items	Description or Army Training	
		in inventory	Devices)	
6.	Extension	Synopsis of	Training Material DA PAM 350-	
	fraining	Extension	106-3 ETM Extension Training	
	Katerials	Training	Materials Catalog: Field	
		Materials	Artillery Battalion LANCE	
			(ARTEP 6-595)	
			Synopsis of Correspondence	
			Courses army Correspondence	
			Course Program	
		Promotion &	Original Source Enlisted	
		Attrition	Master File (EMF)	
		TTHS Rates	Chief or Personnel Operations	
			45 Original Source EMF	

CATEGORY

DATA

SOURCE

COMMENTS

Avail-

Personnel Policy

ability for

Project Model (P3M)

1983-1948 by

MOS/Paygrade

Hardware

١.

2. Personnel

Salaries

Comptroller of the Army

(COA): Force Cost Information

System: Army Force Planning

Cost Handbook

Other Per

Comptroller of the

Cost

Army (COA): Army Force

Planning Cost Handbook

(AFPCH) per Capita Factory

Training

Course Cost

Aggregate

Elements:

COA: Soldier Cost Information

System: MOS Training Cost

Handbook (MOSB) and ATRM-159

Other Course Training Center/School

Costs

Associated With Course

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APPENDIX B

MANPOWER REQUIREMENTS ANALYSIS

Appendix Bl contains the Mission Event diagrams, Figures Bl-l to Bl-10, that were used to record the minimum, maximum and average task group tim's to accomplish the mission cycle for each vehicle in the Corps Support Weapon System. The outputs of these diagrams were used in the construction of the matrix based scenario model and formulation of the operator task/event networks.

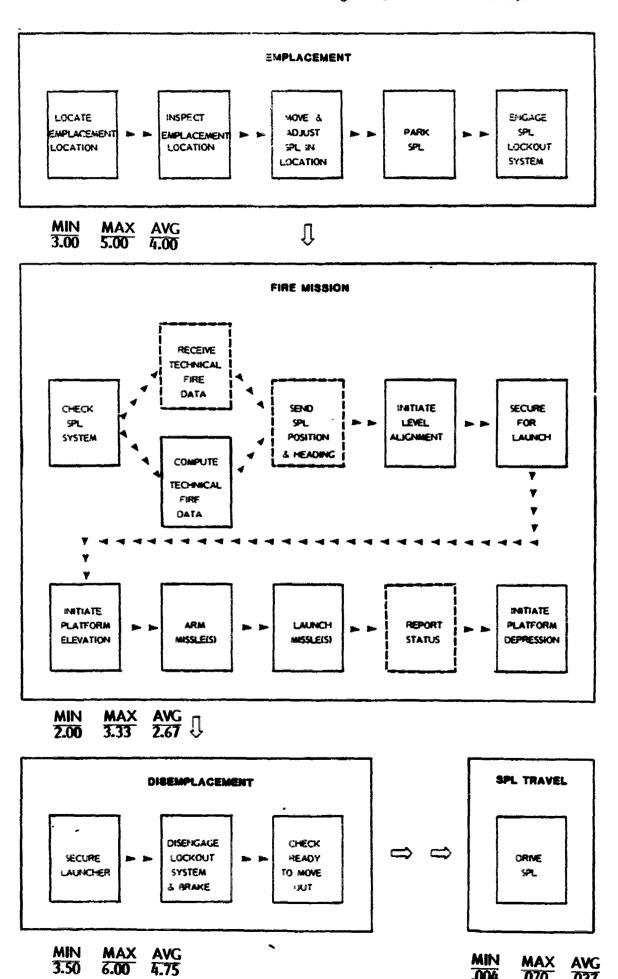
Appendix B2 contains the diagrams and tables used as inputs in the construction of the matrix based scenario model. Figures B2-1 to B2-3 display the "probability tree" diagrams used to provide inputs for matrix construction within the model. Tables B2-1 and B2-2 provided the model with the pertinent travel information required to form the basis for travel workload calculation for each system configuration. The remaining inputs for model construction were the task data outputs from the mission event diagrams.

Appendix B3 contains the diagrams used to record workload information. Figures B3-1 to B3-10 display the task/event diagrams used as a "book keeping" device in the calculation of operator workload. The workload from these diagrams was aggregated by crew positions in order to calculate CSWS crew manpower requirements.

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APPENDIX B1
MISSION EVENT DIAGRAMS

Figure BI-1. SPL Mission Event Diagram (Tracked Reference).



MIN -004

MAX -070

AVG .037

Figure BL4. RSV Mission Event Diagram (Tracked Reference).

こうと むこう じょうこう マンコン はっかい こうしょう とうそう すずからず こうじゅうきょう こうこうずい アップライル じんじん 機能など 建物学 医性神経療 医性神経療 医神経療 医神経療 医神経療 はない かいしょう とうしょう しょうしょう しょうしょう しょうしょう しゅうしゅう

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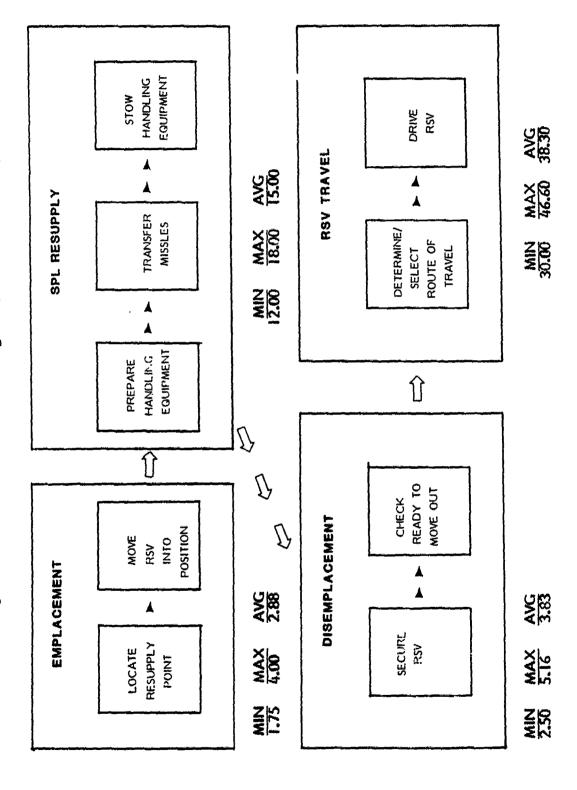


Figure BI-3. SPL Mission Event Diagram (Wheeled Reference). EMPLA_EMENT ENGAGE LOCATE INSPECT MOVE & SPL PARK **ADJUST** EMPLACEMENT EMPLACEMENT LOCKOUT SPL IN SPL LOCATION LOCATION LOCATION SYSTEM AVG 1.83 <u>MIM</u> 1.00 MAX 2.67 Û FIRE MISSION RECEIVE TECHNICAL FIRE INITIATE SECURE CHECK SEND SPL LEVEL FOR SPL LAUNCH ALIGNMENT SYSTEM POSITION & HEADING COMPUTE TECHNICAL FIRE DATA INITIATE INITIATE PLATFORM ARM LAUNCH REPORT PLATFORM MISSLE(S) STATUS DEPRESSION ELEVATION MISSLE(S) MIN 2.00 MAX 3.33 **AVG** ↓ SPL TRAVEL DISEMPLACEMENT DISENGAGE CHECK DRIVE SECURE LOCKOUT READY SYSTEM TO MOVE SPL LAUNCHER & BRAKE OUT MIN 1.00 **MAX** 3.00 <u>AVG</u> 2.00 MIN .002 MAX .053

B-6

Figure B'-4. RSV Mission Event Diagram (Wheeled Reference).

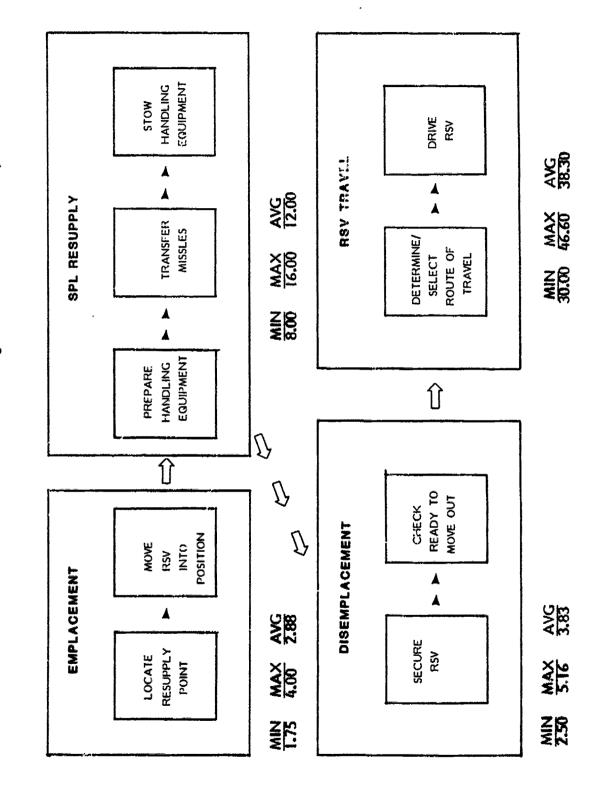
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Figure B+5. SPL Mission Event Diagram (I LANCE). EMPLAÇEMENT INSPECT MOVE & ENGAGE LOCATE PARK SPL **ADJUST** EMPLACEMENT EMPLACEMENT LOCATION LOCATION SPL IN LOCKOUT SPL LOCATION SYSTEM AVG 4.00 MAX 5.00 MIN Û 3.00 FIRE MISSION RECEIVE TECHNICAL FIRE DATA SEND INTIATE SECURE CHECK SPL LEVEL FOR SPL ALIGNMENT LAUNCH SYSTEM **POSITION** & HEADING COMPUTE TECHNICAL FIRE DATA MITTATE INITIATE LAUNCH PLATFORM REPORT PLATFORM ARM MISSLE(S) MISSLE(5) STATUS DEPRESSION ELEVATION MIN 2.00 <u>MAX</u> 5.00 **AVG 3.50 3.5** SPL TRAVEL DISEMPLACEMENT DISENGACE CHECK LOCKOUT SVINC SECURE READY SPL SYSTEM TO MOVE LAUNCHER & BRAKE TUC

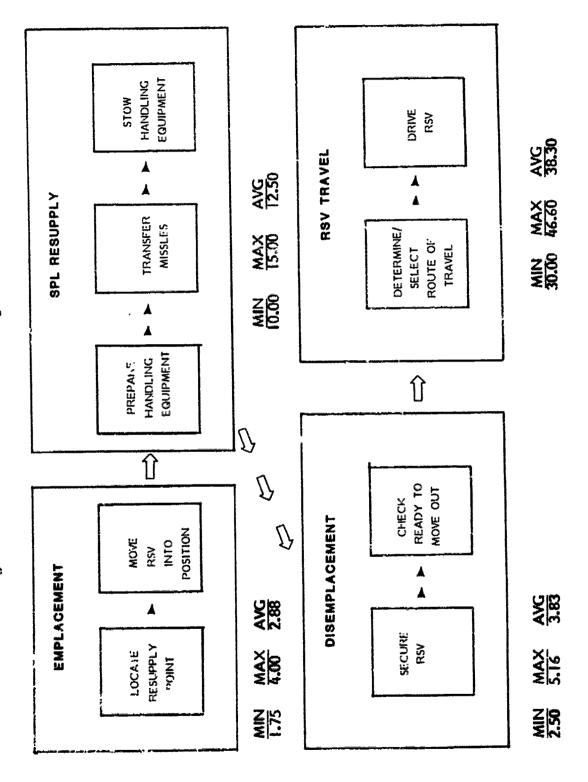
B-8

MIN .004 MAX AVG .037

MIN 3.50

MAX 6.00

Figure BH6. RSV Mission Event Diagram (I LANCE).



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Figure BI-7. SPL Mission Event Diagram (MLIS). EMPLACEMENT ENGAGE LOCATE INSPECT MOVE & **ADJUST** PARK EMPLACEMENT EMPLACEMENT SPL IN SPL LOCKOUT LOCATION LOCATION SYSTEM LOCATION MAX AVG 1.09 MIN Û .67 FIRE MISSION RECEIVE TECHNICAL FIRE DATA PHTIATE SECURE SEND CHECK LEVEL FOR SPL POSITION ALIGNMENT LAUNCH SYSTEM & HEADING COMPUTE TECHNICAL DATA MITIATE INITIATE PLATFORM PLATFORM ARM LAUNCH REPORT DEPRESSION MISSLE(S) MISSLE(S) STATUS ELEVATION <u>/#M</u> MAX AVG 4.00 2.50 € SPL TRAVEL DISEMPLACEMENT DISENGAGE CHECK LOCKOUT DRINE READY SECURE SYSTEM TO MOVE SPL LAUNCHER & BRAKE OUT MAX .044 AVG .023 MIN 100. B-10

Figure B1-8. RSV Mission Event Diagram (MLIS).

ACTIVITY PARK

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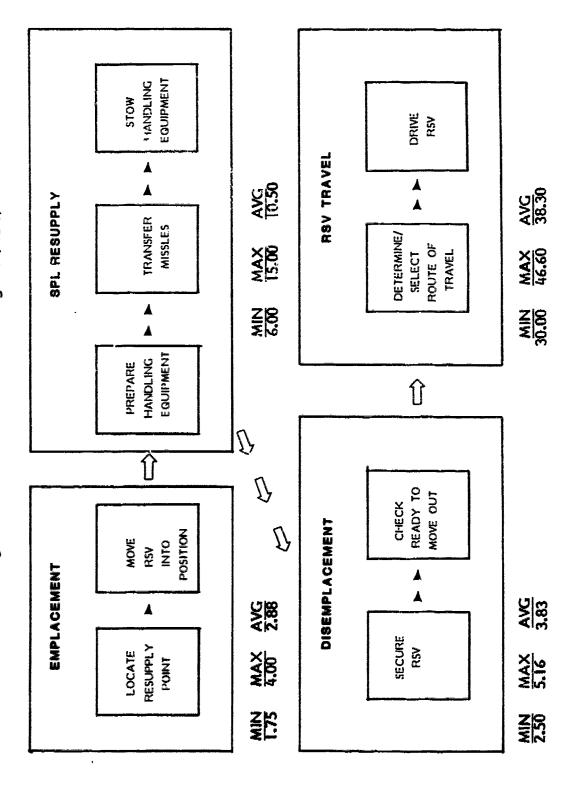


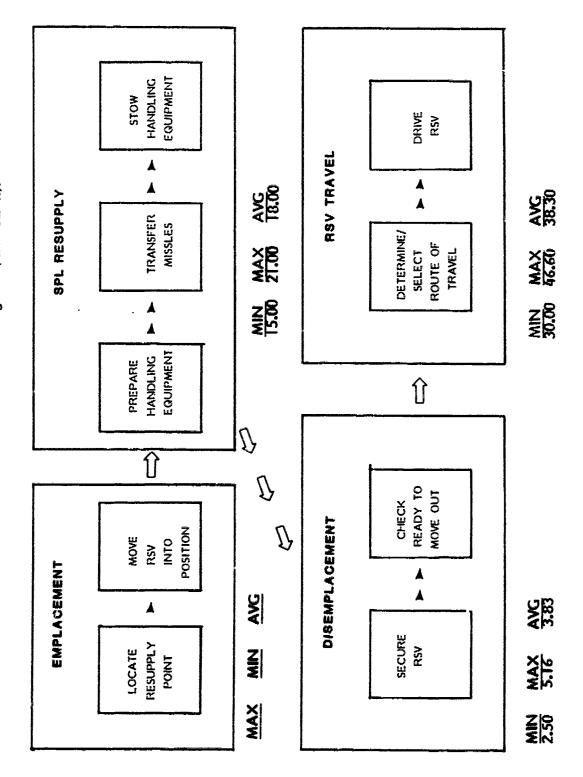
Figure BI-9. SPL Mission Event Diagram (LANCE II). EMPLACEMENT ENGAGE LOCATE INSPECT MOVE & EMPLACEMENT **ADJUST** PARK SPL EMPLACEMENT LOCKOUT LOCATION LOCATION SPL IN SYSTEM LOCATION MAX 2.50 AVG 2.25 MIN Û 2.00 FIRE MISSION RECEIVE TECHNICAL FIRE DATA CHECK **SEND** HUTIATE SECURE SPL LEVEL FOR ٧L SYSTEM POSITION ALIGNMENT. LAUNCH & HEADING COMPUTE TECHNICAL. FIRE DATA INC AYE INITIATE PLATFORM LAUNCH REPORT PLATFORM MISSLE(S) ELEVATION MISSLE(S) STATUS DEPRESSION MIN 1.00 MAX 3.00 **AVG** ₹ SPL TRAVEL DISEMPLACEMENT · DISENCACE CHECK \Leftrightarrow LOCKOUT SECURE HEADY ORIVE SYSTEM TO MOVE SPL LAUNCHER & ARAKE OUT MIN MAX 180. <u>AVG</u> .032 MIN .002

B-12

Figure BI-10. RSV Mission Event Diagram (LANCE 11).

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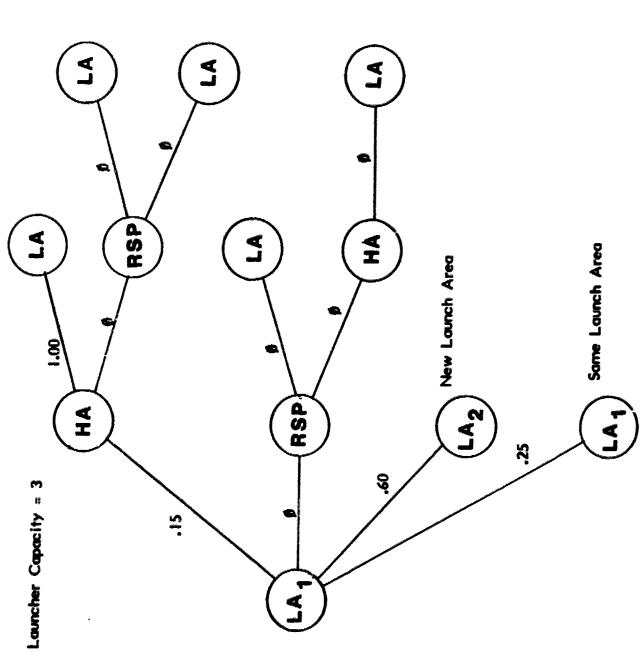
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APPENDIX B2

SCENARIO MODEL INPUTS

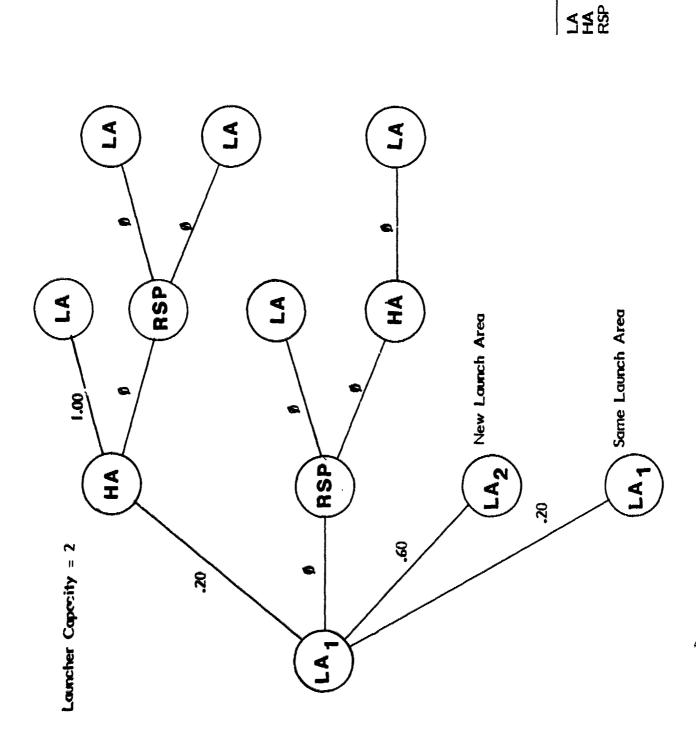


) Figure B2-1. CSWS Mission Probability Tree.

PARKETON SAL

Launch Area Hide Area Rest pply Point

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Figure B2-2. CSWS Mission Probability Tree.

Launch Area Hide Area Resupply Point

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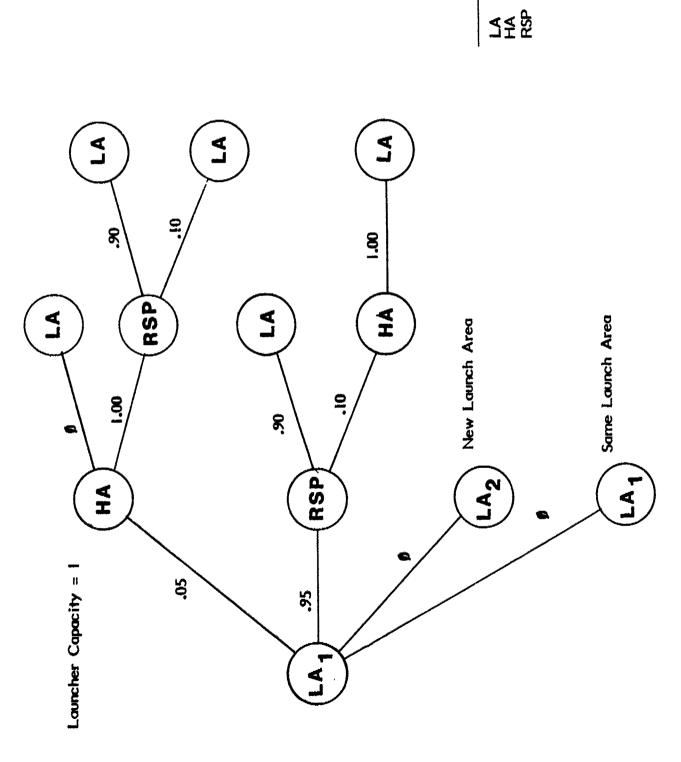


Figure B2-3. CSWS Mission Probability Tree.

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Launch Area Hide Area Resupply Point

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Table B2-1. Scenario Travel Information.

TRAVEL DISTANCES

TRAVEL		DISTA	NCE (In Met	ers)
FROM	TO	MIN	MAX	AVG
Launch Area	Launch Area	50	3600	1825
Launch Area	Hide Area	50	1000	525
Launch Area	Resupply Point	50	1000	525
Hide Area	Resupply Point	50	1000	525
Resupply Point	Ammunition Transfer Point	500	3600	2050

Table B2-2. Scenario Travel Information.

TRAVEL SPEEDS (Miles Per Hour)

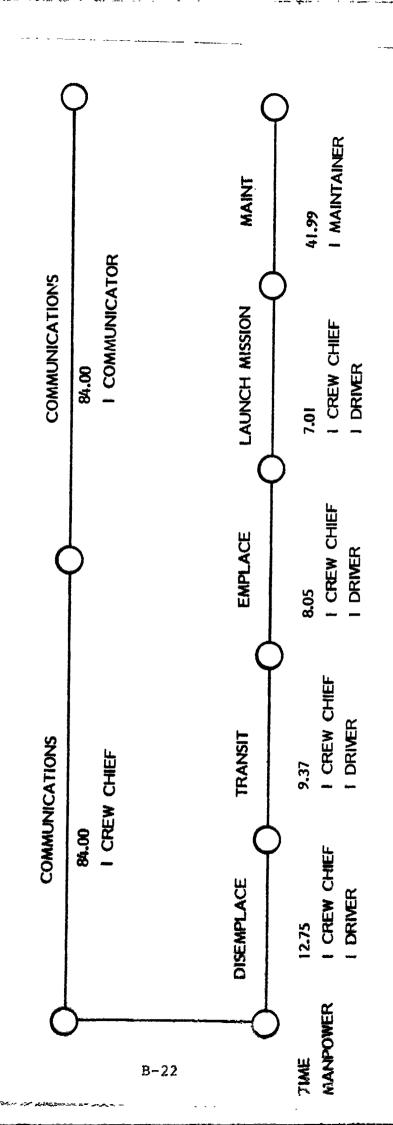
	MIN	% OCCURANCE	MAX	% OCCURANCE	AVG
SPL					
Tracked Reference	15	80	35	20	19.0
Wheeled Reference	21	80	55	20	27.8
I LANCE	15	80	35	20	19.0
MLIS	15	80	40	20	20.0
LANCE II	21	80	55	20	27.8
RSV					
HEMTT	20	100*		math steps	20.0

^{*}Speed restricted because of load weight.

APPENDIX B3

TASK/EVENT NETWORK DIAGRAMS

Figure B3-1. SPL Task/Event Network (Tracked Reference).



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Figure 33-2. RSV Task/Event Network (Tracked Referance).

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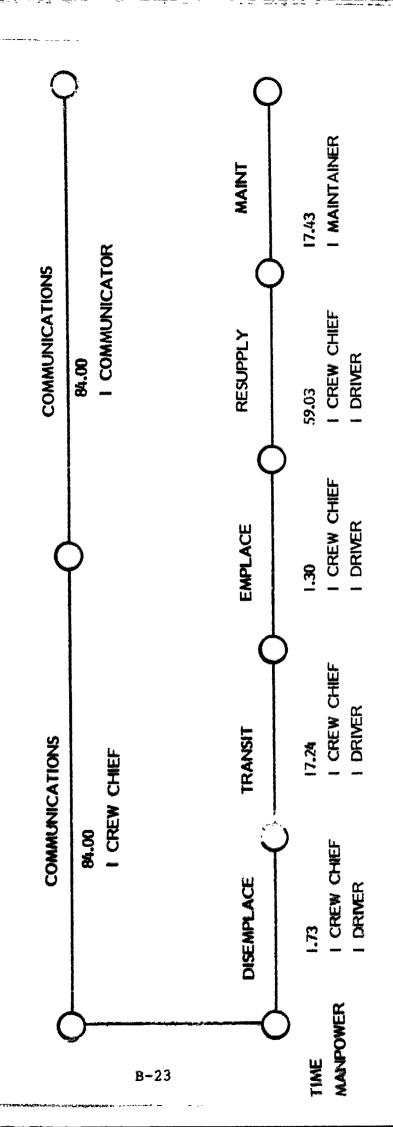
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I MAINTAINER MAINT 39.49 I COMMUNICATOR COMMUNICATIONS LAUNCH MISSIGN I CREW CHIEF SPL Task/Event Network (Wheeled Reference). DRIVER 84.00 7.01 I CREW CHIEF I DRIVER EMPLACE 18.4 I CREW CHIEF Figure B3-3. I DRIWER TRANSIT COMMUNICATIONS 6.59 I CREW CHIEF 84.00 I CREW CHIEF DISEMPLACE I DRINER 5.37 MANPOWER B-24 TIME

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I MAINTAINER MAINT 重量 15.44 September 1 I COMMUNICATOR COMMINICATIONS Deminating (I CREW CHIEF (Imaginanthian) RESUPPLY I DRIVER RSV Task/Event Network (Wheeled Reference). 84.00 16.34 The section of the se I CREW CHIEF I DRIWER EMPLACE 6.3 I CREW CHIEF Figure B3-4. I DRIWER **TRANSIT** COMMUNICATIONS 17.24 CREW CHIEF 84.00 CREW CHIEF [] DISEMPLACE I DRIWER 1.73 MANPOWER TIME B-25

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I MAINTAINER MAINT 49,49 I COMMUNICATOR COMMUNICATIONS LAUNCH MISSION I CREW CHIEF I DRIVER 84.00 9.39 I CREW CHIEF I DRIVER EMPLACE 8.05 I CREW CHIEF DRIVER **TRANSIT COMMUNICATIONS** 9.37 CREW CHIEF 84.00 I CREW CHIEF DISEMPLACE DRIVER 12.75 MANPOWER TIME B-26

SPL Task/Event Network (I LANCE).

Figure B3-5.

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Figure B3-6. RSV Task/Event Network (I LANCE).

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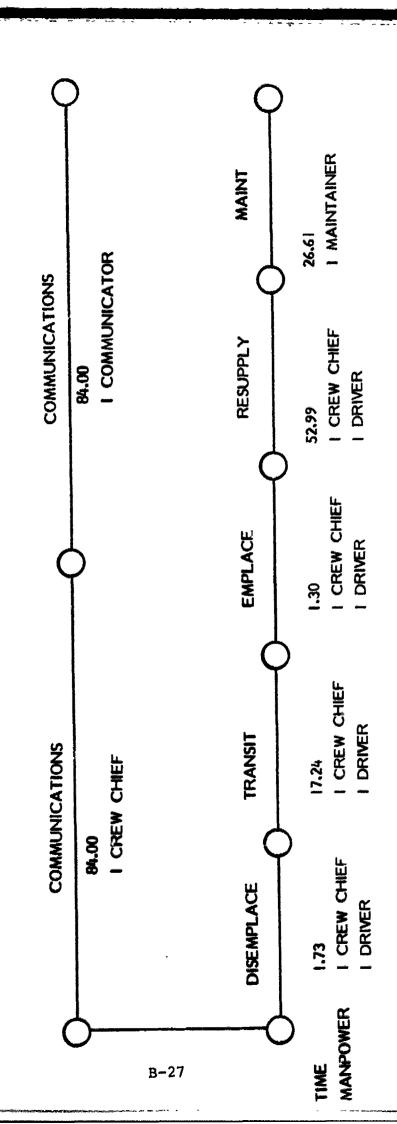
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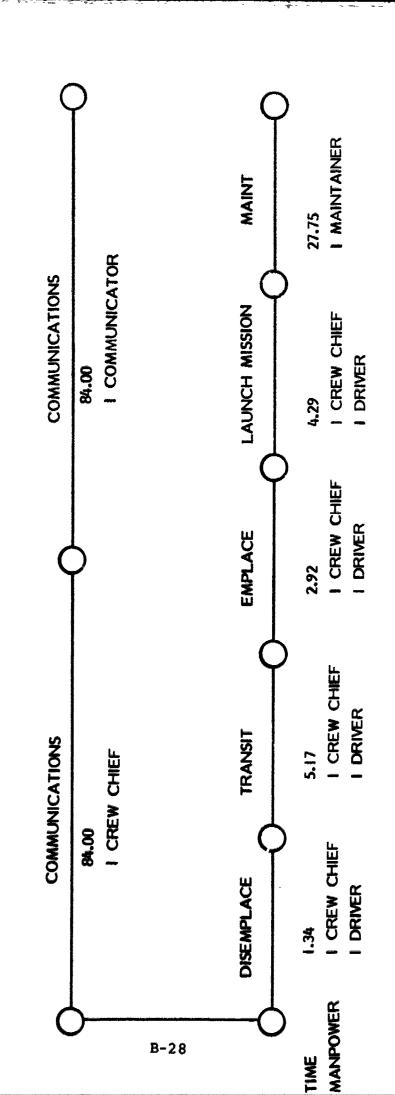
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SPL Task/Event Network (MLIS). Figure B3-7.



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I MAINTAINER MAINT 18.94 I COMMUNICATOR COMMUNICATIONS I CREW CHIEF RESUPPLY 84.00 I DRIVER RSV Task/Event Network (MLIS). 12.75 I CREW CHIEF EMPLACE DRIVER Figure 83-8. I CREW CHIEF I DRIVER TRANSIT COMMUNICATIONS 17.24 I CREW CHIEF 84.00 CREW CHIEF DISEMPLACE DRIMER MANPOWER B-29 TIME

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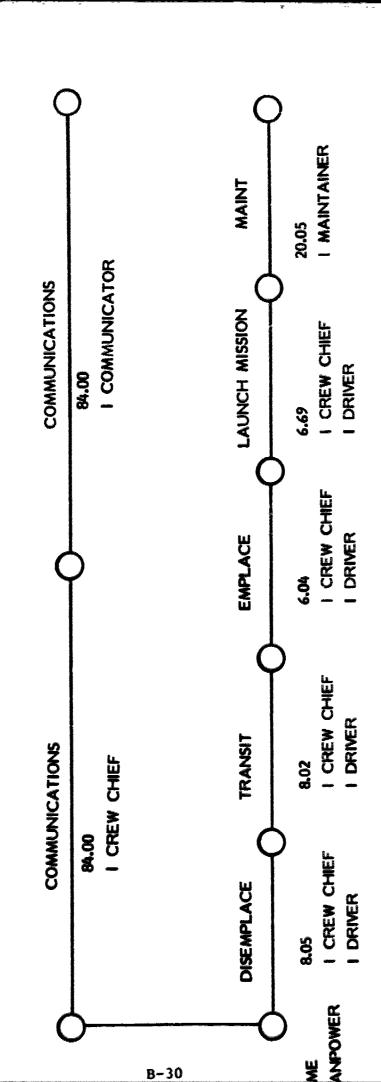
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Figure B3-9. SPL Task/Event Network (LANCE II).

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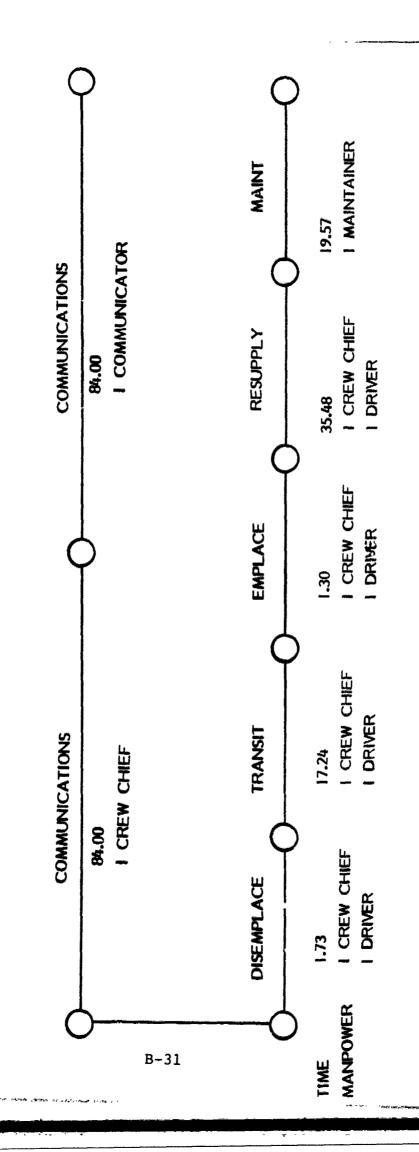
Figure B3-10. RSV Task/Event Network (LANCE 11).

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APPENDIX C
TRAINING RESOURCE REQUIREMENTS ANALYSIS

APPENDIX 11

EQUIFMENT/COURSE MODULE WORKSHEETS

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APPENDIX CI

EQUIPMENT/COURSE MODULE WOPASHEETS

This appendix describes the worksheets that were used to document the equipment used to estimate training requirements and the sources of resident training that are available for this equipment. The appendix is divided into two sections. The first section contains the worksheets used for the operator training analysis and the second section contains those worksheets used for the maintenance training analysis.

The equipment/course module worksheet was used to plan the training analysis and to provide an audit trail between the generic equipment selected to comprise the reterence system, the representative equipment selected for RAM analysis, the equipment chosen for the purpose of training estimation and the source(s) of formal school training programs. This documentation was provided for each comparable subsystem found in the reference and baseline systems.

The first column of the worksheet contains the functional group codes assigned to the generic reference equipment.

These codes were assigned in the engineering analysis and are found in Appendix A2.2.1. In some instances the codes were aggregated together to a point where meaningful MOS identifications and training programs were found. In still other cases more detailed group codes were used because distinct MOS and formal school training was found for individual subsystems below that needed for RAM analysis. For example, Radiac Set AN/PDR-27 is part of group code 2302, personnel protective equipment. Because it alone requires unique maintenance training and has MOS assignments different from other subsystems found within this group code, a more detailed group code used in earlier engineering analyses was assigned.

The second column contains the reference equipment that was chosen in the engineering analysis to provide RAM data, while the next column was used to record the equipment chosen for training estimation. In selecting equipment for either purpose, comparable equipment was chosen that met the generic functional requirements. Another important selection criteria was insuring that appropriate data for the equipment were available. Many differences in equipment are found between these two columns because the desired data were available for one purpose, but not for the other.

The next two columns were used to indicate where formal school training is found for the equipment selected for training estimation. Information recorded included (1) the course title, (2) the course number, and (3) the annex, file number, or objective containing the instruction.

The second half of the worksheet was used to record the same kind of information for the baseline systems as for the reference systems. The information for the three baseline systems was stacked on top of each other opposite the comparable reference systems and within the same group code.

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The last column was used to record major training devices found within the courses of a group number. Training devices represent potential training cost high drivers and were recorded for later use in identifying training device requirements.

C1.1 OPERATOR EQUIPMENT/COURSE MODULE WORKSHEETS

Table C1-1 contains the equipment/course module worksheets for system operator analysis. The group codes for equipment in the operator analysis were grouped on the worksheets based on the major system functions identified in the functional analysis found in Appendix A1.1. This was done

Table C1-

SYSTEM/VEHICLE: SPL/RSV Operation Task Area: <u>Perform Communications</u>

EQUIPMENT/COURSE MODULE WORKSHEET

GROUP	REFERENCE EQUIPMENT	REPRESENTATIVE EQUIPMENT FOR TRAINING ESTIMATION	COURSE TITLE AND POI NUMBER	ANNEX/FILE NUMBER	BASELINE EQUIPMENT	REPRESENTATIVE EQUIPMENT FOR FOR TRAINING ESTIMATION	COURSE TITLE AND PO! NUMBER	ANNEX/FILE NUMBER	TRAINING
2403	VHR-FM Radio Set (AN/ARC-131)	VRC-16 RT-524 R-442	Lance Operations/ CE 430C Fire Direction CE 430J Assistant CE 43CH 250-15J10	CE 430C CE 430J CE 43CH	(1,2,3) SINCGARS IV	VRC-46	Same as Reference	Same as Reference	
2404	Digital Data Communications AN/ASW - 25 (SPL O. ly)	Remote Control Set AH/GNA-19	Lance Operations Fire Direction Assistant 250-15310	CE 4300	(1,2,3) PLRS, JTIDS		Exportable Training		
3204 3205	Weapon Control Indicator Panel	Same							
2403	Intercom Set (AIC-14)	Intercom Set AN/VIC-1	Lance Operations/ CE4300 Fire Direction Assistant	CE430C	(1,2,3) AN/VIG-1		Same as Reference	Same as Reference Same as Reference	
2402	COMSEC UNIE (VINSON TSEC/KY-57	Same.	Lance Operations Fire Direction Assistant	CC43VA CC43VB CC43VB	(1,2,3) VANDAL KYV-4		Same as Reference	Same as Reference	

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Table C1-1 (Con't.)

SYSTEM/VEHICLE: SPL
Operation Task Area: Perform Technical Fire Control

EQUIPMENT/COURSE MODULE WORKSHEET

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GROUP NUMBER	REFERENCE EQUIPMENT	REPRESENTATIVE EQUIPMENT FOR TRAINING ESTIMATION	COURSE TITLE AND POI NUMBER	ANNEX/FILE NUMBER	BASELINE EQUIPMENT	REPRESENTATIVE EQUIPMENT FOR TRAINING ESTIMATION	COURSE TITLE AND POI NUMBER	ANNEXIFILE NUMBER .	TRAINING DEVICE
25	Fire Control System HARPOON	Same	HARPOON Weapon System Operation 5-113-0131 (Navy)	Units 2,3					
3204	Casualty Panel (C-10277)								
3205	Weapon Control Indicator Panel								
33	Fire Control System (MLRS Derivative)		Modified HARPOON Course Unit Descriptions and Times Fased on ALRS. The large units of MLRS course Organization		(1,2,3) Fire Control System (MLRS Derivative) Remote Fire Unit	ې په پې د د د د د د د د د د د د د د د د د د	13M MLFS Crewmember	061-310-2010 061-310-2020	
\$ 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Fire Control Panel				Fire Control Panel Assumed CSWS will include automated systems fault re- cognition software	Patriot	167 Patriot Missile Crew Member Course	RC5.46206 Pault Recognition	· · · · · · · · · · · · · · · · · · ·

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Table Cl-1 (Con't.)

SYSTEM/VEHICLE: SPL Operation Task Area: Perform Shoot Function

EQUIPMENT/COURSE MODULE WORKSHEET

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GROUP NUMBER	REFERENCE EQUIPMENT	REPRESENTATIVE EQUIPMENT FOR TRAINING ESTIMATION	COURSE TITLE AND POI NUMBER	ANNEX/FILE NUMBER	BASELINE EQUIPMENT	HEPRESENTATIVE ECUIPMENT FOR TRAINING ESTIMATION	COURSE TITLE AND POI NUMBER	ANNEX/FILE NUMBER	TRAINING DEVICE
33	Fire Control System Harpoon		HARPOON Weapon System Operation	Units 2,3	(1, 2, 3)		15J Multiple Launch Rocket	061-310-2020 061-310-2050	Andrews and the second
3205	Fire Control Panel		3113-0131 (Navy)				System Crew Member POI		
	Key Board Assembly		Lance Missile Ctew Member 041-150-10	WLESPA	Keyboard Assembly		7		
	Plasma Panel				Plasma Panel				
1204	Nemote Fire Unit		HARPOON Weapon System Operation J-113-0131 (Navy)	Units 2,3					· · · · · · · · · · · · · · · · · · ·
			Lance Missile Crewmenber 043-150-10	WL658A					
32			Modified HARPOON Course Unit Descriptions Based on the large units of MLAS		1,2,3) Fire Control System (MLRS Derivitive)	⊒E ₹ij	13M MLRS Crewmember	061-310-2020 061-310-2050 061-310-2060	
3204			Course Descriptions		Remote Fire Unit				

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SYSTEM/VEHICLE: 3PC

EQUIPMENT/COURSE MODULE WORKSHEET

Operation Task Area: Perform Vehicle Movement

Driving Simulator TRAINING simulator Simulator Driving Driving PATRIOT MISSILE Fault Recognition Not Identified included in the course driver's 061-310-1420 ANNEX/FILE NUMBER 061-310-1010 As task but instruction RC5.40206 Multiple Caunch Multiple Launch Course (Filler) Multiple Launch Course (Filler) Course (Filler) COURSE TITLE AND POI NUMBER Rocket System Rocket System Rocket System Crewmember Course De?!ryment Deployment Deployment 13M-10/20 13M-16/20 13M-10/20 MARS Course RSV Drivers REPRESENTATIVE EQUIPMENT FOR TRAINING ESTIMATION Estimated Prom MLRS Carrier MLRS Carrier Training PATRIOT include system fault recognition software BASELINE COUPMENT Fire Control Panel Assumed CSWS will 3) HEMTT RM977 MLRS SPL XC.RS ANNEX/FILE NUMBER WL.65MB None **Wone** COURSE TITLE AND POI NUMBER Lance Missile Cance Missile Lance Missile 043-19010 043-15010 043-15010 Crevenn Crewman Crewman REPRESENTATIVE EQUIPMENT TRAINING ESTIMATION d from Perform Shoot Purction ransmission Shift Lever REFERENCE SOUPMENT Clectrical Switches Syares. Suspension Electrical Switches Suspension Lockout Transmission Shift Brake Peddle Assy Instrument Panel Instrument Panel Lockout Control Steer ing/Brake Steering Wheel Control Assy. (Lance M667) (MAR 10T) TACKED Lever Continu GROUP 9090 3205 1004 1805 9090 1805 1808 **208 10** 1804 97

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Signem/vehicle: SPL Opprestic: Task Area: Perform Navigation

EQUIPMENT/COURSE MODULE WORKSHEET

GROUP NUMBER	REFERENCE EQUIPMENT	REPRESENTATIVE EQUIPMENT FOR TRAINING ESTIMATION	COURSE TITLE AND POI NUMBER	ANNEX/FILE NUMBER	BASELINE EQUIPMENT	REPRESENTATIVE EQUIPMENT FOR TRAINING ESTIMATION	COURSE TITLE AND POI NUMBER	ANNEX/FILE Number	TRAINING
70 95 84	(Primary) Instrial Wavigstion Set (AM/ASM-92)	PADS AN/U3Q 20	Survey Officers	ASO7R1 ASO7RJ ASO7RM	(1,2,3) Inertial Havigation Set (ASN-130)	(1,2,3) Land Navigation System (USQ-70) PADS	Survey Officers Course	ASO7R1 ASO7RJ ASO7RN	
	Control and Display Unit		Lance Missile Crewman 043-15DlO	W1.65 FA	Control and Display Unit				
3021					Fire Control Panel				
	Land Navigation System (Alternative)	(1,2,3) PADS AN/USQ 70	Survey Officers Course	asotri asotri asotri	(1,2,3)				
70 05 55	Attitude Heading Reference System (ASE-107)		Lance Missila Crewman 043-15510 None	нгаѕра					
2404		Requires MAP Reading Skills and a survey team	None						
2503	Barometric Altimeter (AAU-19)								
7052	Distance Transmitter Unit		None						

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Operation Task Area: Ferform Mavigation (cont.)

EQUIPMENT/COURSE MODULE WORKSHEET

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E NO	
DEVICE	
ANNEX/FILE NUMBER	
COURSE TITLE AND POI NUMBER	The fire control panel will provide the same navigational data when this system is used as the primary system. It is assumed that through software dealen differences will be transparent to the operation.
REPRESENTATIVE EQUIPMENT FOR TRAINING ESTIMATION	NONE
DASBLINE EQUIPMENT	HLPS
ANNEX/FILE RUMBER	
COURSE TITLE AND POI NUMBER	rhis system was treated as a complete system in the analysis. The majority of the training provided on the system will not be training on the system. It will be training the system of system outputs while planning movement and moving.
REPRESENTATIVE EQUIPMENT FOR THAINING ESTIMATION	
REFERENCE SOUTHERY	Pire Confol Panel
DROCE	2023

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Table Cl-1 (Con't.)

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SYSTIM/VFTICLE: SEL /RSV

EQUIPMENT/COURSE MODULE WORKSHEET

TRAINING Drivers Training Driver's Train-Training Annex ANNEX/FILE NUMBER ing Annex A3 Annex A3 Driver's A3 Trained in 15xx osur additional training Training included Will not require Multiple Launch No training now Multiple Launch given on these COURSE TITLE AND POI NUMBER Rocket System Rocket System in driver's significant No Training Deployment Deployment 13M101/20 13M10/20 training systems Course Course REPRESENTATIVE EQUIPMENT FOR TRAINING ESTIMATION MLRS Test and Control Panel Pentilated Face Piece Protection Equipment BASELINE EQUIPMENT Hybrid Collective ANNEX/FILE NUMBER Trained on M17 in COURSE TITLE AND POI NUMBER Trained in 15D 15b - OSUT OSUT NONE Chemical Agent Detector NONE REPRESENTATIVE EQUIPMENT (M8, 43) Radiac Set FOR TRAINING ESTIMATION (AN/PDR-27) HALON 1301 ABC M25A1 Personnel Decontamination Erulpment (M11,M13,M258 Personnel Heater System REFERENCE EQUIPMENT Environmental Protec-Personnel Protective M20 Oxygen Breathing Positive Pressure System Face Piece Test and Control Panel Fire Suppression System Test and Heater Controls Alarm Panel tion System Equipment Apparatus Clothing GROUP 2303 2302 1907 2301 53

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Table Cl-1 (Con't.)

EQUIPMENT/COURSE MODULE WORKSHEET

SYSTEM/VEHICLE: S' L. Operation Task Art s: Perform Missille Mesupply

GROUP NUMBER	REFF JENCE EQUIPMENT	REPRESENTATIVE EQUIPMENT FOR THAINING ESTIMATION	COURSE TITLE AND POI NUMBER	ANNEX/FILE NUMBFR	BASELINE EQUIPMENT	REPRESENTATIVE EQUIPMENT FOR TRAINING ESTIMATION	COURSE TITLE AND POI NUMBER	ANNEX/FILE NUMBER	TRAINING DEVICE
56	Missile Support Assembly	HARPOON Launch Flxtute	HARP IN Cantater Entire Course tea i ining 5113-0133		(1) Same as Reference	(1,2,3)Same as Reference			
2601	Rear Tie down strap								
2602	Forward Tie down strap								
2603	(LANCE) WHS Cradle Sur oort Assembly								
05	Launch fixture Latching/Tie down assembly	HARPOON Launch Fixture	HARPOON Canister team training Jil3-0133 (NAVY)	Entire Course	(2,3) Same as Reference	(2,3) Same as Reference (1,2,3) Same as Reference (2,3) Same as Reference (2,3)	PATRIOT training was considered but rejected because of the lack of detailed course documentation		

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Table Cl-1 (Con't.)

EQUIPMENT/COURSE MODULE WORKSHEET

SYSTEM/VEHICLE: RSV/TRAILLR Operation Task Area: <u>Perform Missile fusupply</u> (cont.)

GROUP	REFERENCE EQUIPMENT	REPRESENTATIVE EQUIPMENT FOR FOR TRAINING ESTIMATION	COURSE TITLE AND POI NUMBER	ANNEX/FILE NUMBER	BASELINE EQUIPMENT	REPRESENTATIVE EQUIPMENT FOR TRAINING ESTIMATION	COURSE TITLE AND POI NUMBER	ANNEX/FILE NUMBER	TRAINING
2001	Winch and Crane System. Material Handling Crane Control Level Assembly LANCE		LANCE Missile Crewmember 15D10-OSUT/043- 15D10	M165MC WL65PO WL65PE	(1) Same as reference (2) (3)				
56	Missile Support Assy.	HARPOON Launch Flxture	HARPOON Canister team training	Entire Course ((1) LANCE	V V V	training was considered but rejected because of the lack of detailed course documentation		
2602	Rear Support Tie Down Assembly Front Support Tie Down Assembly WHS Cradle Support Assembly		J113-0133		(2) MLIS (3) I LANCE				

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Table Cl-1 (Con't.)

SYSTEM, VEHICLE: RSV Operation Task Arga: <u>Pulform Vehicle Movement</u>

EQUIPMENT/COURSE MODULE WORKSHEET

TRAINING	but				
ANNEX/FILE NUMBER	Annex A3 Drivers Training				
COURSE TITLE AND POI NUMBER	13M10/20 Multiple Launch Rocket System Deployment Course		_		
REPRESENTATIVE EQUIPMENT FOR TRAINING ESTIMATION	apply Vehic		See Design Change 7		
BASELINE EQUIPMENT	ical Swi	Steering Wheel	Transmission Shift	Brake Peddle Assembly	Instrument Panel (IIEMTT)
ANNE X/FILE NUMBER					
COURSE TITLE AND POI NUMBER					
REPRESENTATIVE LOUIPMENT FOR FOR TRAINING ESTIMATION	10-Ton				
REFERENCE EQUIPMENT	Electical Switches	Steering Wheel	Transmission Shift Lever	Brake Peddle Assembly	Instrument Panel (MAN 10-TON)
GROUP	90 90	2	1804	1805	1807

Table Cl-1 (Con't.)

SYSTEM/VFHICLE: MISE'LE

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EQUIPMENT/COURSE MODULE WORKSHEET Operation Tash Area: Perform Missile Rusupply

SYSTUM OPERATION

TRAINING ANNEX/FILE NUMBER WL65ME rejected because COURSE TITLE AND POI NUMBER detailed course considered but of the lack of documentation training was 2, 3) PATRIOT REPRESENTATIVE EQUIPMENT FOR TRAINING ESTIMATION Same Ѕаше (Shipping and Storage) because of canistered 2, 1) Missile Canister BASELINE EQUIPMENT MLIS and Lance II treated the same Same ANNEX/FILE NUMBER HARPOON Canister COURSE TITLE AND POI NUMBER Canister Team Training Team Training HARPOON REPRESENTATIVE EQUIPMENT FOR TRAINING ESTIMATION Lance 11 Canister (Lance)
(Shipping and Storage) Missile Round (Lance) REFERENCE EQUIPMENT GROUP

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to provide a functional context in which to analyze the affects of equipment design differences on the operation of the system. In addition, this functional context tends to follow closely the organization of operator courses of instruction.

Cl.2 MAINTENANCE EQUIPMENT/COURSE MODULE WORKSHEETS

Table C1-2 contains the equipment/course module worksheets developed for system maintenance analysis. The group codes on these worksheets follow sequentially the original order developed in the engineering analysis. In this way all components of the various system configurations were tracked to insure that an MOS with maintenance responsibility for each component was identified and that representative training was found.

Within the course data columns of these worksheets, training information was broken down into the three echelons of maintenance required for the CSWS study: crew, organizational, and direct support. These three levels of maintenance were included for all reference and paseline systems.

Table C1-2

VEHICLE: SPI.

EQUIPMENT/COURSE MODULE WORKSHEET

TRAINING DEVICE	,	
ANNEX/FILE NUMBER		
COURSE TITLE AND POI NUMBER	Same au tiacked reference Same as tracked reference	
REPRESENTATIVE EQUIPMENT FOR TRAINING ESTIMATION	М667	
BASELINE EQUIPMENT	(1) M667 (2) Infantry Fightli	
ANNEX/FILE NUMBER	ML65,1M None Annex E: 6 111-E11 6 311-E44 6 311-E44 Annex F: 6 311-F3 3 Annex J: 6 311-J11	None
COURSE TITLE AND POI NUMBER	Ctow. 15010 Lunce Mistalle Ctewman 043-15010 ORG: 63Y10 Track Vehicle Mcchanic 611-63Y10 Track Vehicle Repairer 611-63H10	Crew: 15E10 Pershing Missile Crew Member Odj-15E10 ORG: 63S10
REPRESENTATIVE EQUIPMENT FOR TRAINING ESTIMATION	ان ان م	GOER M520
REFERENCE EQUIPMENT	TRACKED VEHICLE CATIFF: M667	WHBELED VEHICLE. Carrier: M.A.N. 10 Ton
GROUP NUMBER	01, 04, 05, 07- 22	01. 04, 05,07 22

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Table C1-2 (Con't.)

VEHICLE: SPL

EQUIPMENT/COURSE MODULE WORKSHEET

GROUP NUMBEH	HEFERENCE EQUIPMENT	REPRESENTATIVE EQUIPMENT FOR FOR INAMING ESTIMATION	COURSE TITI & AND POI NUMBER	ANNEX/FILE NUMBER	ברואפ ככ	REPRESENTATIVE EQUIPMENT FOR TRAINING ESTIMATION	11.E	ANNEX/FILE NUMBER	TRAINING DEVICE
01, 04, 05, 02 - 22 (Contd)			D.S.: 63410 Wheel Vehicle Repaired 610-63410	None	(1) HEMT'S	GOER M520	Same as Wheeled reference		,
0102, 03, 06	TRACKED VENICILE Starter, Fuel System, flectrival System from M667	Some	Crew: 15D10 Lance Missile Crewman 043-15D10	None	(1) Starter, Fuel System, Blectrical System From M667	Same	Same as Tracked reference	1	ı
			ORG: 63Y10 Track Vehicle Mcchanic 611-63Y10	None					
			D.S.: 63G10 Fuel & Electrical Systems Repairer 610-63G10	Most of POI	(2) Statter, Fuel system, Electrical System from Infantry fighting vehicle XM2	Same from M667	Same as Trecked reference	,	,

Table C1-2 (Con't.)

EQUIPMENT/COURSE MODULE WORKSHEET

GROUP NUMBER	REFERENCE EQUIPMENT	REFRESENTATIVE EGUIPMENT FOR FOR TRAINING FSTIMATION	COURSE TITLE AND POI NUMBER	ANNEX/FILE NIN 3ER	BASELINE FOUPMENT	REPRESENTATIVE EQUIPMENT FOR THAILING ESTIMATION	COURSE TITLE AND POI NUMBER	ANNEX/FILE NUMBER	TRAINING DEVICE
0102,	WHERLED VEHICLE Statter, Fuel System, Riccilical System From M.A.N. 10 Ton	System from GOER M520	Crew. 15E10 Pershing Miscile Crew Member 043-15E10	None					:
			ORG: 63510 Heavy Wheel Vehicle Mechanic 610-63510	Rone	(3) Starter, Fuel System Electri- cal System from	Same from GOER MS20	Same as eled	,	
			D.S.: 63G10 Fuel & Electrical Systems Repair 610-63G10	Most of PDI	HEMTT XM977				
5.3	Environmental Control System		Crew: No training found (NOTE ::		(1) Hybrid Collective M10 Protection Equipment	м10	Same as reference	ı	,
2301	Positive Pressure Equipment: Prom E-2 Aircraft	Collective Protection Equipment MlV from HAWK Batrery Control Center	ORG: 63.10 Qualtermacter and Chemical Equip- ment Repairer	χου e	(2) Hybrid Collective M10 Protection Equipment	MIO	Same as reference	ı	ı
			690-63310		(3) Hybrid Collective M10 Peotection Equipment		Same ds reference	,	1

NOTE: 1. No operator/crew maintenance tra:ning found for most of the NBC detection and protection equipment.

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Table C1-2 (Con't.)

WORKSHEET
MODULE
EQUIPMENT/COURSE

GROUP NUMBEH	REFERENCE EQUIPMENT	REPRESENTATIVE COUIPMENT FOR TRAINING ESTIMATION	11.15	ANVEX/FIL. NUMBFR	BASELINE EQUIPMENT	REPRESENTATIVE EQUIPMENT FOR FOR TRAINING ESTIMATION	COURSE TITLE AND POI NUMBER	ANNEX/F1LE NUMBER	TRAINING
2301 (Contd)			D.S.: 63J10 Quartermaster and Chemical Equipment Repairer 690-61J10	Воле					
230161	Ventilated Face Piece: Oxygen Mask from E-2	Protective Mask M25Al	Crew: 15D10 Lance Missile	Annex C: HWXXAD	(1) M25A1	Same	Some as reference	,	,
	Airceaft		Crewman 15010-08UT		(2) M2SA1	Same	Same as reterence	•	ı
			ORG: 61J10 Quartermaster and Chemical Equipment	Annex E.: 6JJ10-E-2	(3) M25A1	Sanc	Some as reference	ı	t
			690-63310 C.S.: 63310 Quartermaster and Chemical Equipment Repairer 690-63310	Annex E: 03J10-E-2					

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Table Cl-2 (Con't.)

EQUIPMENT/COURSE MODULE WORKSHEET

-	Vericle: Spi.								
GROUP	HEFFRENCE EQUIPMENT	HEPRESENTATIVE EQUIPMENT 108 THAINING ESTIMATION	COURSE TITLE AND POI NUMBER	ANNEX/FIRE NUMBER	BASFLINE CQUIPMENT	REPRESENTATIVE EQUIPMENT FOR FOR TRAINING ESTIMATION	COURSE TITLE AND POI NUMBER	ANNEX/FILE NUMBER	TRAINING
2302	Per sennel Equipment		Crew: No Training Pound (Note 1)		(1) M43AL/42		Same as reference	,	•
17017	Chemical Agent Detector: M43/42	Same	Ory: 31V10 Tactical Comm. Sys. Oper/Mech 101-31V10	Rone	(2) M43A1/42*	H4 3	Same as reference	1	ı
			D.S.: JIR10 Field Radio Repairer	Annex I	(3) M43A1/42* *Additional training may be required due to workload & operational environment	T4 3	Same as reference	ı	,
23023	Sadiac Set: AN/PDR-27	Same	Crew: No Training Found (Note 1)	1	(1)AN/VDR-2*	AN/PDR-27	Same as reference	ı	1
			Org: 31V10 Tactical Comm. System Operator/ Mechanic 101-31V10	None	(2) AN/VDR-2*	AN-PDR-27	Same ds reference	ı	1
			D.S.: 35H10 9 hc Radiac Instrument Sec Repair and Callbiation JAZR 32470-000	9 hours Sec telephone Report	(1) AN/VDR-2* *Additional training may be required due to workload & operational environment	AN/PDR-27	Same as reference		

NOTE 1: No operator/crew maintenance training found for most of the NBC detection and protection equipment.

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EQUIPMENT/COURSE MODULE WORKSHEET

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GROUP	REFERENCE EQUIPMENT	REPRESENTATIVE EQUIPMENT FUR FOR FUR FUR THAINING ESTIMATION	COUNSE TITLE AND POI NUMBER	ANNEX/FILE NUMBER	INE EQUIPM	1 ž /n	COURSE TITLE AND POI NUMBER	ANNEX/FILE NUMBER	TRAINING DEVICE
2303	Personnel	Sanc		Annox C:	(1) ABC M11	Same	Same as	ı	
- 	Decontamination Equipment: ANC M11		Lance Missile Crowman 15010-0807	IIIAXXAD	(2) AUC M11	કુ	relerence Same as	ı	ı
				54810-03	(3) AIK M11	Samo	reference Same as	ı	ı
			Chemical Operations Spectalist				reference		
			494-54110 D.S.: None	,					
23017	Air Conditioner:	18,000 BTU A1F	Crew:		(1) Air Conditioner	18,000 BTU Air	Same as	ı	ı
	from E-2 Arreruft	יזנ	No Training Found		from E-2 Aircraft	Conditioning Unit	Reference		
			szcio sies Equip-	Annax J: 52C10-J-010-010	(2) Air Conditioner from E-2 Aircraft	19,000 BTU Air Conditioning Unit	Same as Raforence	ı	l I
			662-52C10						···-
			p.s.: 52ClO Utilities Equip-	Annov J: 52C10-3-010-010	(3) Air Conditioner from E-2 Aircraft	18,000 BTU Air Conditioning Unit	Same as Roference	1	1
-			ment Repairer 662-52C10						
								-	-
									

MIL CW

Table C1-2 (Con't.)

EQUIPMENT/COURSE MODULE WORKSHEET

S	
VEHICLE:	

GROUP	HEFERENCE EQUIPMENT	HEPRESENTATIVE CHUPMINT TOH THAINING ESTIMATION	COURSE TITLE AND POI NUMBLE	ANNE X/F IL E NUMBLR	HASELINE COUPMENT	HEPRESENTATIVE LOUIPMENT FOH THAINING ESTIMATION	COURSE TITLE AND POI NUMBER	ANNLX/FILE NUMBER	THAINING DEVICE
2304	Fire Suppression System from I:-2 Aircraft	*Manual CO2 System from M667 M667 *No Fire Deteriors or Automat: . sire Jupprostation systemers sion systemers found it, any military vehicles	Crew: 15D10 Lance Missile Crowman 043-15D10 0RG: 63Y10 Track Vehicle Hochanic 611-64Y10 D.S.: 63J10 Cuartermaster and Chemical Equipment 'upairer 690-61J10	None Nono (No specific training - basic skills ! Knowledges taught in AIT	cst cm		Same as rufuronce Samo as creference		r 1 1
2401	Communication System VHF-FM Radio Set: ARC-1.1 From CH-46 Holicopter	Radio Set An/VRC-47	Crew: 15310 Lance Operations/ Fire Direction Assistant J50-15310 PG: 31V10 Factical Comm. Sys. Oper/Mech 101-11V10	Annex: B C12430C Annex II CR26IB CR26II CR26IIC CR 26IIJ CR26IIF CR 26IIL CR26IIC CR 26IIL CR26IIC CR26IIH CR26IIIC CR26IIH CR26IIIC CR26IIH CR26IIIC CR26IIH	Sincgats - V Sincgats · V Sincgats - V	AN /VRC-47 AN /VRC-47 An /VRC-47	Same as reference Same as reference Same us roforenco	ı ı ı	, , ,

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EQUIPMENT/COURSE MODULE WORKSHEET Table C1-2 (Con't.)

VEHICLE: SPI.

GHOUP	HEFERENCE ECUIPMENT	REPHESENTATIVE LOUPMENT LUI HAINING ESTMATION	COURSE TITES AND PUI NUMBER	ANNEXP'I I NUMBER	BASELINI COUPMENT		COURSE TITLE AND POF NUMBER		TRAIN
(Canta)			DS: 31E10 Freld Radio Repaires 101-31E20	Abnox E: 201 202 203 204		i		-	:
240,	COMSKY 'Date: VINSOR TSEC/KY-28 From CH-46 Helacopter	71115031 F5RC VKY -5 v	trew: 15,110 Lance Operations/ Fire Direction Ammistant 250-15510 DRG: 31V10 Factical Crown SYS Oper/Mech 101-31V10 D.S.: 31S10 Pirld General COMSEC Repairer 260 - 31510	Annex: 82 CC4 VVI CC4 VVI CR26JD CR26JD CR26JD CR26JD CR26JD CR26JC CR26JD CR26	(1) VARDAL, KYV - 4 (2) VARDAL, KYV-4 (1) VARDAL, KYV-4	VIUSON KY-57 VIUSON KY-57 VIUSON KK-17	Sano as Sono an Leference Sono an	, ,	: : :
COPE	Intercom Sett Aic-14 From CH-46 Helicopter	AN /VIC1	Crew: 15.110 Annex Lance operations/B410c Fire Direction Ausignant 250-15.310 Ober 11VIt Annex Traction Come. All Fi Sys. Spa. State 101-31VIt	Anjies (1) 164108: Alijes K. Alij Filem	(1) AN/VIC-1 (2) AN/VIC-1 (1) AN/VIC-1	NN/VIC-1 NN/VIC-1	Same du Foference Same au Same au Loference		

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Table C1-2 (Con't.)

EQUIPMENT/COURSE MODULE WORKSHEET

GROUP NUMBER	REFERENCE EQUIPMENT	REPRESENTATIVE COUPMENT SOR	COURSE 11TLE AND POI NUMBER	ANNEX/FILF NUMBER	ELINE	RETTESENTATIVE SQUIPMENT FOR TRAINING ESTI. TION	COURSE TITLE AND POI NUMBEH	ANNEX/FILE NUMBER	TRAINING DEVICE
2403 (Contd)			DS: 31510 Field General COMSEC Repairer 160-31510	Pone					
24031	Personnel Helmet: Air Crewman Personnel Helmet	Combat Vehicle Crewman (CVC) Helmet	Crew: No Training Found		(1) CVC	CNC	Same as Reference Same as	ı	ı
			ORG: 31V10 T ctical Comm Sys Oper/Mech 101-31V10 D.S.: None	None	(3) CVC	cvc	Reference Same as Reference	1	J I
2404	Digital Communications Set: AN/ASW-25 From E-2 Aircraft	AN/ASW-25	Crew: No Training Found Org: (Note 1) D.S.: Navy Course AN/ASW-25 A/B Digital Data Communications System C-102-3015	Unit 1 Unit 2: Topic 1 Unit 3: Topic 2 Topic 2	(1) PLRS/JTIDS Hybrid	AN/ASW-25, Data Conversion Unit From Harpoon Weapon System, and Radio Sel IN/ARC-114 (Note 3)	Crew: (Note 2) D.S. Navy Course AN/ASW-2E Unit 2: A/B Digital Topic Data Communica- Unit 3: tions em Topic C-10½ Topic	- Un.t 1 Un.t 2: Topic 1 Topic 3 Topic 5 Topic 5	

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Table Cl-2 (Con't.)

E-UIPMENT/COURSE MODULE WORKSHEET

GROUP	REFERENCE EQUIPMENT	REPRESENTATIVE EQUIPMENT FOR FOR TRAINING ESTIMATION	COURSE TITLE AND POI NIIMBER	ANNEX/FILE NUMBER	BASELINE EQUIPMENT	REPRESENTATIVE EQUIPMENT FOR FOR TRAINING ESTIMATION	COURSE TITLE AND POI NUMBER	ANNEX/FILE NUMBER	TRAINING DEVICE
2404 (Contd)		Radio Set AN/ARC-114 (AN/ASW-25 does not have a transmitter.	Crew. No Training Found			:	Plus: Navy Course Harpoon Weapon System (Surface Appli-	Lesson Topic	ı
		Only the transmitter component is taken from AN/ARC-114.)	Org: 35K10 Avionic Mechanic Course 102-35K10	Annex A: A09			cation) Maint- enance J-113-0127	,	ı
			D.S.: 35L10 Avionic Communications Equipment Repair 102-35L10	Annex G: G01 G02 G03 G04			Phis: 35110 Avionic Cormuncations Equipment Repair 102-35110	Annex G G01 G02 G03 G04	1
					(2) PLRS/JTIDS Hybrid (3) PLRS/JTIDS Hybrid	Same as Baseline l	Same Same	Same Same	, ,
NOTES: 1. 019&	anizational maintenance t as not to dupiliate troub	Organizational maintenance training was used from only the AN/ARC-114 so as not to duplicate trombleshoot and remove/replace tasks.	the AN/ARC-114 tasks.						
2. The form	The individual-collective tr formal school training requi- organizational maintenance.	The individual-collective training plan for PLRS does not identify any formal school training requirements for operator/crew and organizational maintenance.	not identify any and						
3. The c	data conversion unit fro baselines in order to ac ning requirement identif for PLRS.	The data conversion unit from the Harçoon weapon system was added to the baselines in order to achieve the three week direct support training requirement identified by the individual-collective training plan for PLRS.	was added to support ctive training						

MIL CW

Table C1-2 (Con't.)

EQUIPMENT/COURSE MODULE WORKSHEET

GROUP NUMBER	REFERENCE EQUIPMENT	REPRESENTATIVE EQUIPMENT FOR FOR THAINING ESTIMATION	COURSE TITIE AND POI NUMBER	ANNEX/FILE NUMBER	BASELINE EQUIPMENT	REPRESENTATIVE EQUIPMENT FOR TRAINING ESTIMATION	COURSE TITLE AND POI NUMBER	ANNEX/FILE NUMBER	TRAINING DEVICE
25 2501	Navigation System: Inertial Navigation	PADS AN/USQ-70	Crew: 82Cl0 Artillery Survey		(1) PADS	Ѕаме	Same as reference	ı	ı
	Sec: AN/ASN-92 From E-2 Aircraft		Special 35210 org.: 35210	Annex 3	(2) PADS	Ѕаве	Same as reference	1	ı
			Electronic Devices Repairer 198-35E10		(3) PADS	Ѕаве	Same as reference	ı	ı
			D.S.: 35E10 Special Electronic Devices Repairer	Annex J					
2502	Attitude Heading Reference Set: AN/ASN-107 From S-3 Aircraft	Stability Augumentation System: AH-1G SAS Amplifier or AH-1S	Crew: No Training Found	,	(1) LR-80 (2) LR-80	AH-1G/AH-1S 6 CN-998/ASN AH-1G/AH-1S 6CN-998/ASN	Same as Reference Same as reference	1 1	1 1
		Directional Gyro: CN-998/ASN (Part of AN/ASN-43 Gyro System)	Org: 35K10 Avionics Mechanic 102-35K10	Annex 3: B04	(3) LR-80	AH-1G/AH-1S &CN/998/ASN	Same as reference	ı	3
			D.S.: 35M10 Avionic Navigation and Flight Control Equipment Repair 102-35M10	Annex J: J10 J11 J12 Annex K					

MIL CW 1

EQUIPMENT/COURSE MODULE WORKSHEET Table C1-2 (Con't.)

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12				·			
TRAINING DEVICE	I	1	1	t ,	1		
ANNEX/FILE NUMBER	1	,	ı	1 1	ı		
COURSE TITL. AND POI NUMBER	,	ı	ı	Same as reference	1		
REPRESENTATIVE EQUIPMENT FOR TRAINING ESTIMATION	,	,	ı	Same	1		
BASELINE EQUIPMENT	(1) None	(2) None	(3) None	(1) M752 Missile Support Assembly (2) None	(3) None		
ANNEX/FILE NUMBER	ŧ	ī	•	None	None	None	
COURSE TITLE AND POI NUMBER	Grew: No Training Found	Org: No Training Found	D.S.: No Training Found	Crew: 15D10 LANCE Missile Crewman 043-15D10	Org: ASI23 LANCE Missile Mechanic 043-F4	D.S.: 63H10 Track Vehicle Repairer 611-63H10	
REPRESENTATIVE EQUIPMENT FOR TRAINING ESTIMATION	Same			Same			
REFERENCE EQUIPMENT	Barometric Altimeter: AAU-19			Missile Support Assembly: M752			
GROUP NUMBER	2503			26			

Table C1-2 (Con't.)

VEHICLE: SPI.

EQUIPMENT/COURSE MODULE WORKSHEET

REFERENCE EQUIPAIENT	RE' AESENTATIVE EQUIMENT FOR THAINING ESTMATION	COURT TITES ND ND FOI HUNGER	ANNEX/FILL NUMBLR	BASELINE LOUIPMENT	REPRESENTATIVE EQUIPMENT FOR FOR TRAINING ESTIMATION	COURSE TITLE AND POI NUMBER	ANNEX/FILE NUMBER	TRAINING DEVICE
	Same	Crew: 15010	Annex D:	(1) LANCE Launch	Same	Same as	i	
M752		LANCE Missile	WL65PM			reference		
		Cresman						
		043-15010		(2) HARPOON	*Patriot Launcher	Crew: 16T10	Operator Pre-	,
				Derivative	Mechanical Assembly	Patriot Missile	ventive Mainte-	
		Org: AS123	Annex A:			Crew Member No	ance Task:	
		LANCE Missile	WL640D			Course Number	RC 5.40707	
		Mechanic					Difficult to	
		043-F4					Determine if	
							Applies	
		D.S.: 63H10	None					
		Track Vehicle				Org: 24T10	None	,
		Repairer				Patriot System		
		611-63H10				Mechanic No		
						Course Number		
		Also: 45L10	None					
	·	Artillery				D.S.: 45L10	None	,
-		Repairer				Artillery		
		642-45110				Repairer		
		(M740 Zero				642-45110		
		Length Guided				(Note 1)		
		Missile						
		Launcher)		(3) HARPOON	*Patriot Launcher	Crew: 16T10	Operator Pre-	ı
		(Note 2)		Derivative	Mechanical Assembly	Patriot Missile	ventive Mainte-	
						Crew Member No	ance Task:	
						Course Number	RC 5.40707	
							Difficult to	
							Determine if	
							\pplies	

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Table C1-2 (Con't.)

VEHICLE: SPL

EQUIPMENT/COURSE MODULE WORKSHEET

TRAINING DEVICE	,				,								1			,			_								
ANNEX/FILE NUMBER	Hone				None					-			,			1								·····			
COURSE TITLE AND POI NUMBER	Org: 24T10	Patriot System	Mechanic No	Course Number	D.S.: 45£10	Artillery	Repairer	642-45510	(Note 1)	Same as	reference		Same as	reference		Same as	reterence										
REPRESENTATIVE EQUIPMENT FOR THAINING ESTIMATION	*Without Azimuth	Drive								Same			Same			Same											
BASELINE EQUIPMENT										(1) Batteries: M752			(2) Batteries: M752			(3) Batteries: M752										ture has been identified as a problem.	•
ANNEX/FILE NUMBER										Annex D:	WL65PM				None				Annex B:	2781-210	2781-211					xture has been ide	
COURSE TITLE AND POI NUMBER										Crew: 15D10	LANCE Missile	Crewman	043-15010		Org: ASIZ3	LANCE Missile	Mechanic	043-F4	D.S.: 27810	LCSS Test	Specialist/LANCE	Repairer	121-27810		been developed.	CE M752 launch fil	
REPRESENTATIVE EQUIPMENT FOR THAINING ESTIMATION										Same															1. Direct support maintenance training for Patriot has not been developed.	cort maintenance of the LAN	LANCE-specific maintenance MOS has been proposed.
REFERENCE EQUIPMENT										Batteries:	M752														support maintenance tra	ick of proper direct supp	LANCE-specific maintenant
GROUP NUMBER								-		3001														NOTES:	1. Direct	2. The a	A nev

Table C1-2 (Con't.)

EQUIPMENT/COURSE MODULE WORKSHEET

TRAINING	ı	1	1			ı	1 1	
ANNEX/FILE NUMBER	t	ı	,	_		,	1 1	
COURSE TITLE AND POI NUMBER	Same as reference	Same as reference	Same as	reference		Same as reference	Same as reference Same as	reference
REPHESENTATIVC. EQUIPMENT FOR TRAIRING ESTIMATION	MK42	*MK 4.2	* ************************************		*With elevation only	HARPOON Fire Control System	HARPOON Fire Control System HARPOON Fire Control	
BASELINF EQUIPMENT	(1) MLRS Derivative	(2) MLRS Derivative	(3) MLRS Derivative			(1) MLRS Derivative	(2) MLRS Derivative (3) MLRS Derivative	
ANNEX/FILE NUMBER		Lesson Topics 16.1 - 16.9		Lesson Topics 16.1 - 16.9		Unit 3 Lesson/Topic 3.1	Unit 3	
COURSE TITLE AND POI NUMBEH	Crew: No Training Found	Org: Navy Course Gun Mount	MOD 9 6 10 A-113-0044	D.S.: Navy Course Gun Mount 5"/54 MK42 MOD 9 & 10 A-113-0044		Crew: Navy Course HARPOON Weapon System (Canistet Con- figuration) Oper-	J-113-0131 Org: Navy Course HARPON	Weapon System (Surface Applica- tion) Maintenance J-113-0127
REPRESENTATIVE EQUIPMENT FOR FOR TRAINING ESTIMATION	Gun Mount 5"/54 MK42 MOD 9 6 10					Same		
REFERENCE EQUIPMENT	Dt. 1					Fire Control System: HARPOON Weapon System		
GROUP	Œ					32		

MII CW

Table C1-2 (Con't.)

EQUIPMENT/COURSE MODULE WORKSHEET

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GROUP	REFERENCE EQUIPMENT	REPRESENTATIVE EQUIPMENT FOR TRAINING ESTIMATION	1171.Е 3 ВЕН	X/FILE EH	BASELINE EQUIPM	ESENTATIVE EQUIPMI FOR VING ESTIMATION	COURSE TITLE AND POI NUMBER	ANNEX/FILE NUMBER	TRAINING
32 (Contd)			D.S.: Navy Course HARPOON Heapon System (Surface Application) Naintenance	Chit 3					
VEHICLE/SYSTEM:	YSTEM: MISSILE								
33	HISSILE Round: *LANCE GKS2C	Same	Crew: 15D10 LANCE Missile Crewman	Annex D: WL65ME	(1) LANCE II Missile	*LANCE GH52C	Same as reference	ı	DVC 06-52 Guided
			10	Annex A:	(2) MLIS Missile	MCRS Missile	Crew: 13M10 MLRS Crewman Filler	None	(LANCE)
	*Certifled - Round		Mechanic	ML040TH			000-13M10 Org: 13MS8 MLRS Mechanic 000-13MS8	None	
			910	Annex B:			D.S.: Same as reference	,	
			LCSS Test Specialist/LANCE Repairer 121-27810	2781-205 2781-206 2781-207 2781-209 2781-215	(3) LANCE 11 MISSILE	CAN CAN TO THE CAN THE CAN TO THE CAN TO THE CAN THE	re ference		

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EQUIPMENT/COURSE MODULE WORKSHEET Table C1-2 (Con't.)

VEHICLE/SYSTEM: MISSILL

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e e					-				*****			
TRAINING	1	1				ı		ı		1		,
ANNEX/FILE NUMBER	1	None		RC 4.11508		None		None		RC 4.11508		None
COURSE TITLE AND POI NUMBER	Same as reference	Crew: 16TlO Patriot Missile	Crew Member No Course Number	Org: 24710 Patriot System	No Course Number	D.S.: 27BlO LCSS Test	Specialist/LANCE Repairer	Crew: 16T10	Patriot Missile Grew Member No Course Number	Org: 24Tl0 Patriot System Mechanic	No Course Number	D.S.: 27810 LCSS Test Specialist/LANCE Repairer
REPRESENTATIVE EQUIPMENT FOR FOR TRAINING ESTIMATION	Same	За те						Same				
BASELINE COURTENT	(1) JANCE M599	(2) Missile Canistor: Patriot						(3) Missile Canister:	Patriot			
ANNEX/FILE NUMBER	None		Annex A: WL640B			None		None				
COURSE TITLE AND POI NUMBER	CIGW: 15D10 LANCE MISSIDE	043-15010	Org: AS123 LANCE Missile Mechanic	043-F4		D.S.: 27B10 LCSS Test	Specialist/LANCE Repairer	Also: Navy	HARPOGN Weapon System (Surface) Application	Maintenance J-113-0127		
REPRESENTATIVE EQUIPMENT FOR FOR TRAINING ESTIMATION	Same											
REFERENCE EQUIPMENT	Missile Canister: LANCE MS99	(Shipping & Stolage Containel)										
GROUP		.										

MIL CW-1

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Table C1-2 (Con't.)

VEHICLE: RSV

EQUIPMENT/COURSE MODULE WORKSHEET

GROUP NUMBER	REFERENCE EQUIPM	REPRESENTATIVE EQUIPMENT FOR FOR FOR	COURSE 117 & AND HO: NUMBER 1	ANNEX/FILE NUMBER	E EQUIPME	RESENTATIVE EQUIPMENT FOR INING ESTIMATION	COURSE TITLE AND POI NUMBER	ANNEX/FILE NUMBER	TRAINING DEVICE
01-16, 18, 22	Cattlet M.A.N. 10-Ton	GOEN M320	Crew: 15820 Persony Missile	None	(1) HEMTT M985	GUER M520	Sam as reference		,
			043-15810		(2) HEMTT M985	GOER MS20	Same as reference	ı	ı
			ORG: 63S10 Heavy Wheel Vehicle Hechanic 610-63S10	None	(3) HEMTT M985	GOER M520	Same as reference	ı	ı
			D.S.: 63W10 Wheel Vehicle Repairer 610-63W10	None					
20	Winch & Crane System: M39 Handling Unit	Same Other handling units with course and maintenance training:	Crew: 15D10 Lance Missile Crewman 043-15D10	Annex D: WL65P0		M39	Same as teference	•	,
		• M553 Wrecker (10-Ton) 63510 None • M816 Wrecker (5-Ton) 63W10 None	ORG: ASI 23 Lance Missile	Annex A: WE640E	(2) HIAB 870 (3) HIAB 870	м 39	Sab. as r, ference		i
		H98A1 Recovery vehicle 63H10 None H578 Recovery vehicle 63Y10 troubleshoot hydraulic system	Mechanic 043-F4 053.: 63H10 Track Vehicle Reparter 611-63H10 (Note 1)	None			reference		

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MIL CW I

EQUIPMENT/COURSE MODULE WORKSHEET

(Con't.)
C1-2
Table

VEHICLE: RSV	: RSV								
GHOUP	7	REPRESENTATIVE EQUIPMENT FOIL	COURSE 1111F AND POI NUMBER	ANNLX/FII E NUMBE R	IST TINE EQUIPME	REPRESENTATIVE EQUIPMENT FOR THAINING ESTIMATION	COURSE TITLE AND POI NUMBER	ANNEX/FILE NUMBER	TRAINING DEVICE
20 (Contd)		M88Al Recovery vehicle 63710 (couble- shoot hydraulic system							
2	Same as SPL	·	,	,	,	1	,	•	ı
**	Same as SPL except no Digital Date Communications Set			1	•	1	•	1	1
56	Missile Support Ausembly: M688	Sanc	Crew: 15D10 Lance Missile	None	(1) м688	Same	Some as Reference	ı	1
		-	Crewman 043-15D10		(2) None	None	1	1	,
			ORG: ASIZ] Lance Missile Mechanic	Rone	(3) None	None	ı		,
			0.550						
			Track Vehicle Repairer						
					NOTE:				
					l. The lack of proper M39 Handling Unit, he Lance-specific main	The lack of proper direct support maintenance of the Lance M39 Handling Unit, has been identified as a problem. A new Lance-specific maintenance MOS has been proposed.	e of the Lance oblem. A new posed.		

EQUIPMENT/COURSE MODULE WORKSHEET Table Cl-2 (Con't.)

GROUP	REFERENCE EQUIPMENT	HEPRESENTATIVE EQUIPMENT FOR FORE	COUNSE TITE AND PUI NUMBER	AMNEX/FILI NUMBER	BASELINI LOUIPMENT	REPRESENTATIVE EQUIPMENT 1918 TRAINING ESTIMATION	₹ ₹	ANNEX/FILE NUMBER	TRAINING DEVICE
2.2	None	GNER MY20 Traile:	Crews 15810 Persbing Assass	None	(1) HEMAT M989	GOER M520 Trailer	Same as		
			O43 15E10		(2) REMAT M989	GOER MS 20 Trailer	Same as	ı	,
			ORG: 63S10 Heavy Wheel Veh.le Mechanic 610-63S10	None	(3) HEMAT M989	GOER M520 Teailer	Same as reference	ı	,
			U.S.: 6JW10 Wheel Vehicle Repairer 610 6JW10	Rune					
97	Missile Support Assembly: M752	Бане	C.C.W.: 15D10 Lance M143114 14 VMAn 043-15D10	None	(1) Missile Support Assembly M752	Same	Same as reference	,	ı
			DKG: ASI23 Lance Missile Hechanic 04 J-F4	None	(2) None			, ,	i i
			D.S.: 63HJO Track Vehicle Repairer 611-63HJO	Моле					

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APPENDIX C2
MOS ASSIGNMENTS

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APPENDIX C2

MOS ASSIGNMENTS

C2.1 SUMMARY OF CSWS MOS AND ASI ASSIGNMENTS

A list of all the CSWS MOS and ASI is found in Table C2-1. Altogether there were 15 MOS and 1 ASI that were identified to have responsibility for the operation and maintenance of the Corps Support Weapon System.

Of the MOS and the ASI identified, only 1 MOS and the ASI are new. The new MOS is CSWS Crewmember (15XX) while the new ASI is CSWS Mechanic (ASIXX). Section 5.2.2 gives an explanation of the MOS selection criteria.

C2.2 SUMMARY OF MOS ASSIGNMENTS BY EQUIPMENT

Table C2-2 contains all of the MOS required for the CSWS equipment configurations. The group numbers on the worksheets are the same as those found on the maintenance equipment/course module worksheets (Table C1-2). The worksheets and the MOS assignment table are intended to be used closely together.

Table C2-1. Summary of CSWS MOS and ASI Assignments.

MOS	TITLE (With Abbreviation)
15XX	CSWS Crewmember (*)
ASIXX	CSWS Mechanic (*)
27B	Land Combat Support Test Specialist/LANCE Repairer (LCSS Test Sp/LANCE Rep)
31E	Field Radio Repairer (*)
31s	Field General ComSEC Repairer (Field Gen COMSEC Rep)
31V	Tactical Communications Systems Operator/Mechanic (Tac Comm Sys Op/Mech)
35E	Special Electronic Devices Repairer (Sp Elec Devices Rep)
35H	Calibration Specialist (*)
52C	Utilities Equipment Repairer (Utilities Equip Rep)
54E	NBC Specialist (*)
63G	Fuel and Electrical Systems Repairer (Fuel & Elec Sys Pap)
63H	Track Vehicle Repairer (Track Veh Rep)
63J	Quartermaster and Chemical Equipment Repairer (QM & Chem Equip Rep)
63S	Heavy Wheel Vehicle Mechanic (Hvy Wveh Mech)
63W	Wheel Vehicle Repairer (Wveh Rep)
63Y	Track Vehicle Mechanic (Track Veh Mech)

 $[\]star$ Indicates no abbreviation.

Table C2-2. Summary of MOS Assignments by Equipment.

diodo				REFERENCE	ENCE	,					BAS	BASELINE	r-1			1
NUMBER (S)	LPMENT	TRAC	CKED		WHE	WHEELED	-	H	LANCE		E	MLIS	1	LANCE	ICE II	ы
, and		S		C4.	o l		ا د	υ	0	Ŀ	O	0	Q.	C	0	Ľ,
01,04,05,07-22	Carrier	15xx		63н	15xx	638	6 3W	15XX	63Y	63Н	15xx	63Y	63H	LSXX	638	6 3W
0102,03,06	Fuel & Electrical Systems	15XX	63Y	63G	15XX	635	636	15xx	637	636	15xx	63Y	636	15xx	638	636
2301	Positive Pressure Equip.	15XX	634	633	15XX	638	633	15XX	637	633	15xx	637	633	15XX	638	633
23012	V .tllated Face Piece	1588	633	633	Y SXX	633	633	15XX	633	634	15XX 15XX	633	633	777 15**	633	633
230231	Chemical Detector	15xx		3.E	72XX	337	315	15xx	310	318	15xx	310) (i) (i) (i) (i) (i)	15xx	310	3.5
230232	Radiac Set	15xx	310	358	15xx	310	35H	15xx	317	35H	15XX	317	35H	15xx	310	35H
2303	Personnel Decontamination	15xx	54E	None	15XX	54E	None	15XX	54E	None	15xx	54E	None	15xx	54E	None
2304	Fire Suppression	15xx	637	633	15XX	638	63J	15XX	637	633	15XX	63Y	633	15xx	635	633
7401	VHF-FM Radio Set	15xx	310	31E	15xx	310	31E	15xx	310	315	15XX	310	国 () ()	15xx	317	315
7.167	Tomsec Unit	XXST.	310	318	15XX	310	318	Texx	310	318	Toxx	317	575	72XX	71.0	25.5
2.03	Dordonnol Holmot	XXX	310	316	15XX	310	31E	X X X X X X X X X X X X X X X X X X X	31.	SIE	TOXX	31.0	317	7777	۲۲۸ ۲۰۱۰	315.
2404	Digital Communications	15 8 8	31.6	None 315	XXCT	310	None 3.15	77.7 15.88	310	30ne	15xx	310	one one	4 X X 5 4	310	3.1 E
2501	Inertial Navigation	15xx	358	355	15XX	35E	325	15XX	35E	35E	15XX	35E	3 in E	15xx	35E	355
2502	Attitude Hearing Ref. Set	15xx	35E	35E	15xx	358	355	15xx	35E	35E	15XX	35E	100 100 100 100 100 100 100 100 100 100	15xx	358	35E
2503	Barometric Altimeter	15 X X	35E	35E	15XX	35E	35E	ł	!	i I	1	;	1	1	1	1
26	Missile Support Assembly	15XX	SIXX	63H	15XX	ASIXX	6 3W	15XX	ASIXX	6 3 Н	;		!	¦	;	i
30	Launch Fixture	15XX	ASIXX	63Н	LSXX	ASIXX	638	15xx	ASIXX	6311	15xx		€311	15xx	ASIXX	6314
30011	Batteries	15xx	ASIXX	27B	15xx	ASIXX	278	15XX	ASIXX	278	15XX		27B	15XX	ASIXX	27B
100	Launcher Drive System	ISXX	ASIXX	63H	15XX	ASIXX	63%	15xx	ASIXX	63H	15XX		€3H	15XX	ASIXX	63W
9 m	Fire Control System	ISXX	ASIXX	27B	TSXX	ASIXX	27B	LSXX	ASIXX	27B	Texx	ASIXX	27B	15XX	ASIXX	272
34	Missile Canister	15xx	ASIXX	27B	15xx	ASIXX	27B	15XX	ASIXX	27B	15xx		2.78	15xx	ASIXX	27B
RS		. NOG														
01-18,22	Carrier	15xx	638	63₩	15XX	638	6.3W	15xx	638	63W		635	¥3%	15xx	638	63W
20		15XX	ASIXX	9 ME 9	15xx	ASIXX	6 3W	15XX	ASIXX	63W	15XX	ASIXX	£ 3W	15XX	ASIXX	6.3W
22.0	Environmental Control		as SPL													
56 26	Communication System Missile Support Assembly	Same	as SPL, ASIXX	except 63W		no digital communications 15xx ASIXX 63W 15X	nunicat 63W	ions 15xx	ASIXX	6 3W	;	ł	ł	ţ	;	i
Trailer: 06-16,22 26	Chassis Missile Support Assembly	Trailer: Same as	er: as RSV as RSV													

Basically, the worksheets document all of the rormal course training that is available for each equipment component by maintenance echelon, while Table C2-2 indicates to what MOS the training is to be assigned. Where the source of training and the MOS assignment are the same or where no training source was found or training required, there is no additional training needed. However, if there is training found and the source of that training is different from the MOS assignment, additional training will need to be developed.

C2.3 EQUIPMENT ASSIGNED TO EACH HOS

Table C2-3 contains a breakdown of all the CSWS maintenance MOS and the equipment that the MOS has responsibility for. Included on the table is (1) an indication of the end item that the equipment is part of, (2) its assigned group number taken from the equipment/course module worksheets described in Appendix C1.1, and (3) which system configuration the equipment is found in.

Table C2-3. Equipment Assigned to Each MOS.

REMARKS	Except MLIS and LANCE II	Except HLIS and LANCE II			
EQUIPMENT	Missile Support Assembly	Launch Fixture Batteries Launcher Drive System Fire Control System Missile Round Missile Canister Winch & Crane System Missile Support Assembly	Batteries Fire Control System Missile Round Missile Canister	Chemical Detector VHF-FM Radio Set Intercom Set Digital Communications	Comsec Unit
GROUP NUMBER(S)	26	30 30011 31 32 33 34 20 26	30011 32 33 34	230231 2401 2403 2404	2402
END ITEM(S)	w	លលល	α α α α	0 0 0 0 8 8 8 0 8 8 8 8	S&R
WOS	15XX	ASIXX	27B	31E	318

Table C2-3. (Continued).

REMARKS							Except wheeled reference and LANCE II	Except wheeled reference	Except wheeled reference and LANCE II Except wheeled reference and LANCE II
EQUIPMENT	Chemical Detector Radiac Set VHF-FM Radio Set Comsec Unit Intercom Set Personnel Helmet Digital Communications	Inertial Navigation Attitude Heading Ref. Set Barometric Altimeter	Radiac Set	Air Conditioning	Personnel Decontamination	Starter Fuel System Electrical System	Carrier	Missile Support	Assembly Launch Fixture Launcher Drive System
GROUP NUMBER(S)	230231 230232 2401 2402 2403 2403 2404	2501 2502 2503	230232	23017	2303	0102 03 06	01,04,05,	7	30 31
END ITEM(S)	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	യ യ	S&R	S&R	S&R	% % % % % % % % % % % %	တ	ß	ഗ ഗ
MOS	31V	35E	35H	52C	54E	63G	63н		

Table C2-3. (Continued).

MOS 63J

REMARKS				Except tracked vehicles	tracked	tracked tracked	tracked	nacept tracked vehicles				
EQUIPMENT	Positive Pressure	Equipment Ventilated Face	Piece Fire Suppression	Carrier	Starter	rder System Electrical System Positive Pressure	Equipment Fire Suppression	Carrier	Starter	Fuel System	Electrical System Positive Pressure	Equipment Fire Suppression
GROUP NUMBER (S)	2301	230161	2304	01,04,05,	0102	06 2301	2304	01,04,05,	0/-22 0102	03	2301	2304
END ITEM(S)	S&R	S R R	S&R	w	w	ഗ	တ	R&T	œ	0 4 0	4 E4	æ

638

Table C2-3. (Continued).

	Except tracked vehicles	Wheeled reference only	tracked vehicles tracked vehicles	IS and LANCE II	Except wheeled vehicles	wheeled vehicles wheeled vehicles wheeled vehicles wheeled vehicles
REMARKS	Except t	Wheeled	Except t Except t	Except M	Except w	Except wheeless where Except wheeless was a second of the sec
EQUIPMENT	Carrier	Missile Support Assembly	Launch Fixture Launcher Drive System Carrier	Winch & Crane System Missile Support Assembly Except MLIS and LANCE II	Carrier	Starter Fuel System Electrical System Positive Pressure Fire Suppression
GROUP NUMBER(S)	01,04,05,	26	30 31 01,04,05,	20 20 26	01,04,05,	0102 03 06 2301 2304
END ITEM(S)	w	ဟ	S R R	r ret	ഗ	တ လ လ လ လ
MOS	63W				6 3Y	

Abbreviation code for system(s):

S = Self-Propelled Launcher
R = Resupply Vehicle
T = Trailer

Annual V Cream Big

C2.4 SUMMARY OF MOS ASSIGNMENTS BY SYSTEM

Table C2-4 is a summary of the CSWS MOS by system and end item. Six MOS were affected by design differences in the various equipment contigurations. The MOS affected are identified by asterisks on the table. The remaining below were not affected by the design differences.

Table C2-4. Summary of MOS Assignments by System.

XX * SPL:	XX * 15XX * 15XX * 15XX * 15XX * 15XX XXX XXX XXX XXX * 15XX * 15XX * 15XX * 15XX XXX XXX XX XX XX XX XX XX XX XX XX X	TRACKED	KEFEKENCE	CE WHERLED		T LANCE		BASSLINE	되 교	I,ANCE I	
XX * SPL: SPX SPL: SPX SPX<	XX * 15xX * 15xX * 15xX * 15xX * 15xX * 15xX		THE OWNER WHEN THE PROPERTY OF		There of trees a dischargement this	1	near co-section of the section of th		Tecconomic and selective transferrence	- 1	
X + 15XX	XXX * 15XX	,r:		SPL:		SPL:		SPL:		SPL:	
XX * ASIXX * ASIXX * ASIXX * 27B * 27B * 27B * 27B * 31E * 31E * 31E * 27B * 31E * 31E * 31E * 31E * 31V * 31V * 31E * 31E * 35H * 35H * 35H * 35H * 54E * 54E * 54E * 54E * 63G * 63G * 63G * 63G * 63B * 63H	IXX * ASIXX * ASIX * ASI	15XX	*	15XX	*	15XX	*	15XX	.hç	15XX	*
* 27B * 27B * 27B * 27B * 31E * 31E * 31E * 31E * 31S * 31B * 31E * 31E 31E <td>E * 27B * 31B *<td>ASIXX</td><td>*</td><td>ASIXX</td><td>*</td><td>ASIXX</td><td>*</td><td>ASIXX</td><td>*</td><td>ASIXX</td><td>*</td></td>	E * 27B * 31B * <td>ASIXX</td> <td>*</td> <td>ASIXX</td> <td>*</td> <td>ASIXX</td> <td>*</td> <td>ASIXX</td> <td>*</td> <td>ASIXX</td> <td>*</td>	ASIXX	*	ASIXX	*	ASIXX	*	ASIXX	*	ASIXX	*
* 31E * 31E * 31E * 31S * 31S * 31E * 31S 31S * 31S 31S * 35E * 35E * 31S * 35E * 35E * 35E 35H * 35H * 35E 52C 52C 52C 52C 52C 54E 54E 54E 54E 54E 54E * 63G 63G 63G 63G 63G * 63J * 63J * 63G 63S * 63J * 63J * 63S * 63S * 63J * 63S * 63S * * * * * * 63S * * * * * * * * * * * * * * * * * <t< td=""><td>E * 131E * 31E * 3</td><td>27B</td><td>*</td><td>27B</td><td>*</td><td>27B</td><td>*</td><td>27B</td><td>*</td><td>27B</td><td>*</td></t<>	E * 131E * 31E * 3	27B	*	27B	*	27B	*	27B	*	27B	*
* 31S 31S 31S 31S * 31V 31V 31V 31V * 35E * 35E * 35E 35H 35H 35H 35H 35H 52C 52C 52C 52C 52C 54E 54E 54E 54E 54E * 63G 63G 63G 63G * 63G 83 8 63S 63G 63W 8 63B 63W 8 63W 63B 8 63W 8 63B 63B 63B 63B 63B 63B 63B	S 31S 31S 31S 31S 31S 31S 31S 31S 31S 31V 40	31E	*	31E	*	31E	*	31E	*	31E	*
* 31V * 31V 31V 31V * 35E * 35E * 35E 35H 35H 35H 35H 35H 35C 52C 52C 52C 52C 54E 54E 54E 54E 54E 54E * 63G 63G 63G 63G 63G * 63J 63J 63J 63J 63J 63W * 63J 63J 63J 63J 63W * 63W 63W * 63W 63W * * 63W 63W * * 63W 63W * * 63W 63W * * * 63W 63W	V * 31V * 31V	318		318		318		318		318	
* 35E * 35E * 35E 35H 35H * 35H 35H 52C 52C 52C 52C 52C 54E 54E 54E 54E 54E * 63G 63G 63G 63G * 63J 63J * 63J 63S 63J 63J 63W * 63J 63W * 63J 63Y 63J 63Y 63J 63J 63J 63J 63J 63J 63J 63J 63J 63J <t< td=""><td> H</td><td>31V</td><td>*</td><td>317</td><td>*</td><td>310</td><td></td><td>310</td><td></td><td>31V</td><td></td></t<>	H	31V	*	317	*	310		310		31V	
35H 35H 35H 35H 52C 52C 52C 52C 54E 54E 54E 54E 63G 63G 63G 54E * 63H * 63G 63J 63J 63J 63J 63S 63S 63Y 63S 63Y 63W 63Y 63W	Harrow H	35E	*	35E	*	35E	*	35E	*	35E	*
52C 52C 52C 52C 54E 54E 54E 54E 63G 63G 63G 63G 63G * 63H * 63J 63J 63J 63J 63J 63J 63S 63S 63S 63Y 63W 63Y 63W	C 52C 54E 54C	35H		35H		35H		35H		35H	
54E 54E 54E 54E 63G 63G 63G 63G * 63H * 63G 63J 63J 63J 63J 63J 63S 63S 63W * 63S 63Y 63W	E 54E 54E 54E 54E 54E 54E 54E 54E 54E 54	52C		52C		52C		52C		52C	
* 63G 63G * 63G * 63J * 63J * 63J 63J * 63J * 63J 63S 63J 63W * 63J 63J 63J 63J	G 63G 63G 63G 63G 63G 63G 63G 63G 63G 63	54E		54E		54E		54E		54E	
*	H * * 63H * 63H * 63H * 63H * 63J	63G		636		63G		63G		63G	
63J 63J 63J 63J 889 889 889	Same MOS for each system 635 635 635 635 635 638 638 638 638 638 638 638 638 638 638 638 852 638 852 638 852 638 852 638 852 638 852	63н	*			63H	*	63H	*	1	
<	Same MOS for each system	63J		63J		63J		633		63J	
63W * 63W	Same MOS for each system 635	I		638		1		i		638	
63Y 63Y	(Same MOS for each system) (XX * 31V 63J * 63S * 52C 52C	!		6 3W	*	i i		!		63W	*
	(Same MOS for each system) XX * 31V 63J * IXX * 35H 63S * 52C 52C	¥89		! !		63Y		¥63¥		! !	
		15XX ASIXX 31E 31S	* * *	31V 35E 35H 52C	*	63J 63S 63W	*		se modi ect des	lfied to sign changes	

APPENDIX C3

COURSE MODIFICATION WORKSHEETS

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APPENDIX C3

COURSE MODIFICATION WORKSHEETS

This appendix describes the worksheets that were used to modify existing courses and develop new courses. The appendix is divided into two sections. The first section describes the worksheets used to develop a new operator course while the second section describes the worksheets used to develop a new operator describes the worksheets.

The course modification worksheet, which is used to modify or to develop new courses, is divided into three sections. The left-hand section is used to record all of the course modules/elements that are found in the existing course. All of the courses developed for the CSWS study were developed from an existing course. For those parts of an existing course that are not changed, it is not necessary to describe that course in great detail. In such cases, those parts of the existing course are recorded at the annex level. It, however, part of an annex is to be modified, the course elements in recorded at the more detailed level of file or objective. In this way, the pertinent parts of the course

module can be specifically identified and modified in projecting the new course.

The right-hand section of the worksheet contains course information taken from other courses from which additional instruction will be developed. The military branch, course hame, and course number are indicated at the beginning of each new instructional module/element.

In the middle section of the worksheet the new course is developed. All of the existing and additional course modules/elements are combined into a projected course which will meet the task, skill, and knowledge requirements of the equipments associated with the new course. This notional course draws upon the lett-hand side for existing course information and upon the right-hand side for additional instruction to be taken from other courses. In this manner, it is easy to identify where course elements are being taken from in the development of the new course.

Each of the three sections contains the same course information: (1) the total number of instructional nours required for each module, (2) the instructional hours for each module proken down by type of instruction, and (3) the

student/instructor ratio associated with each type of instruction.

At the end of each course, total academic hours, non-academic hours, and total training time both in hours and man-days, are listed along with a breakdown of the total academic hours by type of instruction for both the existing and projected course.

A column for indicating modification/deletion codes is provided between the existing course and the projected course sections in order to identity the nature and importance of the changes being made in course modules/elements. The modification/deletion codes are as tollows:

Course Modification/Deletion Codes

- EL Subsystem eliminated major task impact
- NC No change in subsystem no task impact
- MIN Minor subsystem/mission modification minor task change
- MAJ Major subsystem/mission modification major task impact
- ADD New subsystem added major task impact.

Major task impacts are those tasks and their associated prerequisite skills and knowledges that are added, deleted, or modified in some substantial way, e.g., modes of operation changed, new technology added, mission procedures altered drastically, etc. Minor task impacts are those tasks and their associated prerequisite skills and knowledges that are not significantly changed, e.g., equipment/ nomenclature changed, mission changed but mission procedures not changed, etc.

The last column on the worksheet is used to record the functiona. Group code that was assigned during the engineering analysis. These numbers provide an easy means of identifying and accounting for new subsystems being added to a Jourse.

In developing a new course, care is taken to project into the new course the course philosophy and instructional strategy found in the existing course. This is done because the existing course is most similar in content and is being taught at the school where the new course would be most likely to be taught. Accordingly, the types of instruction and st dent/instructor ratios found in courses used for projecting new instruction, are changed to reflect the existing course. These kinds of adjustments are necessary

especially when using Navy courses to project instruction.

DRC has noted a tendency for Army training to be performance based to a greater extent than comparable Navy courses.

DRC encountered difficulties in obtaining student/instructor ratios for some courses. In these instances, student/instructor ratios were taken from either TRADOC Cir 351-12 or DA Pam 570-558 and the difficulty was noted on the worksheet.

C3.1 OPERATOR COURSE MODIFICATION WORKSHEETS

A completely new operator course was developed for CSWS: CSWS Crewman (043-15XXX). The new course was projected from the existing Lance Crewman Course (043-15D10). The course developed for the reference system was modified into three new courses to reflect the operator differences in the three baselines. Tables C3-1, C3-2, C3-3, and C3-4 contain the course modification worksheets for each of the four courses.

C3.2 MAINTENANCE COURSE MODIFICATION WORKSHEETS

One maintenance course was developed for CSWS: CSWS Mechanic (ASIXX). The course would lead to an ASI that would be added to the new operator MOS mentioned in the

previous section. The rationale for developing these two courses is found in Section 5.2.2. The new ASI course was developed from the existing ASI course: Lance Missle Mechanic (043-F4). The new course developed for the reference systems was modified into two more courses to reflect design differences in the MLIS and Lance II baselines. Tables C3-5, C3-6, and C3-7 list the course modification worksheets for each of the courses.

Six other courses were modified to reflect various design dirferences in the reference and/or the baseline systems:

121-27Bl0 LCSS Test Specialist/Lance Repairer

101-31E20 Field Radio Repair

101-31V10 Tactical Communications Systems
Operator/Mechanic

198-35E10 Special Electronic Devices Repairer

611-63HlO Track Vehicle Repairer

610-63WlO Wheel Vehicle Repairer

Tables C3-8 - C3-16 list the course modification worksheets for each of these courses.

All of the new and modified courses and the systems that affected them are shown in Table C3-17. Altogether 16 courses were developed to reflect the design differences in the various systems.

Table C3-1

COURSE MODIFICATION WORKSHEET

15xx

MOS

COURSE Corps. Sapport Also the System Crow Member

REFERENCE, BASELINE

See Lenance Work: 16 7007 ઠે S/I RATIO TYPL INSTRUC TION HOURS COURSE ANNEXES, FILES, AND OBJECTIVES USED TO PROJECT ADDED MODULES MODIFIED COURSE INFORMATION S/I RA110 = = Ξ. Ξ 6:1 :: :: ; 6:1 TYPE INSTRUC TION C PE2 PEl ບ່ວ ٠ ပ HOURS ۶. د ?; ? ; ? .9 7.1 : ٦: maintenance procedures on the carrier M667 and launch fixture, fire control computer, and NI-CAD battery D2 Operation and Maintehands
Procedures COURSE ANNEXES FILES, AND OBJECTIVES D1 Course Introduction WLoSLA Course Introduction WLOSLA Introduction to Operation of the CSMS WL65MA Introduction to Operation of CSMS Vehicles WL65PM - Daily preventive WL65MC - Periorm resupply WE65PL - Introduction to CSWS publications ML65MB Engage/Disengage the suspension lockout system on the SPL Sub Total boom oper at rons MODIFICA FION/ DELETION CODE 3 3 Z Š Š 豆 ž S/I RATIO ::: = ę. 1. 9:1 .. TYPI INSTRUC TION EXISTING COURSE INFORMATION 32 3 55 J, · . 5.0 ноияѕ 5.7 **9**.₹ 7.7 ~: `` 3.5 Course Introduction BioSh Course Introduction BioSh Introduction to Operation of the lance Missile System MESSMA - Introduction to Operation of Lance Vehicles and Identification of Missile Propellants WL65MC - Prepare the loader transparter (IT) for aperation WL65PM - Daily preventive maintenance procedures on carrier M667, launch fixture, filling device, solitity kit, monitor programmer, and HI-CAD battery Operation and Maintenance frocedures COURSE ANNEXES, FILES, AND OBJECTIVES Sub Total WLOSMB Prepare the Self-Propelled Launcher (SPL) for Operation WEBSEL - Introduction to TANCE publications Lance Missile Cresman 043-15010 3 3

MIL CW 4

2

AIL CW4

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		99 #	Sec Table	·····	ii s	2603 2603 2603 88V 88V 70	2601 2602 2603	*		
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		TYPE INSTRUC TION				્ સં		<u> </u>		
(X)(1		ROORS				9.0 0.4		0.0		
MOS MOS	COURSE INFORMATION	COURSE ANNEXES, FILES, AND OBJECTIVES USED TO PROJECT ADDED MODULES			Hatpoon Cantater Team Fraining J113 0133 (Navy)	Introduction to Harpoon Canister Handling Team Treining Harpoon Canister Handling Operations		Performance and written tests		
1 417.11	noo a:	S/A	2	<u>;</u>		7.		G	 	
vorge, Support Missila Crow Bember	MODIFIED	TYPI	1 ±	, 		133		<u>s</u>		
		HOURS	÷	8 8 4		÷		9.4		
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	and the community of th	MODIII A TION, LALLENON	MA J			¥.	3			
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(*)	INFORM,	мосия	- T	 =		φ. 	7 4	7. F		
Table -1 (Con't.) courst modification worksheet heference, baseline	EXISTING COURSE INFORMATION	COURSE ANNEXES, FILES AND OBJECTIVES	Whosher Pertism Daily Freventive maintrainer on Londer transporter handling unit, tripod belief, and cling team assembly	of 6511 Examinación and	of to supply and Transportation operations	Mindle Mate Import and Load Mindle Wain An emblayers of the 1984) with wathead section (who onto the loader trinsporter and repackage	Mender Conversion	61 Older Examination and		

15XX

MOS

COURSE Corps Support Massile by ten crew Member

	FGC	2401 2403 2403 3205
	S/I RATIO	6:1 1:1 1:1 1:1 1:1
	TYPE INSTRUC TION	PE1 PE2 C C C C C C C C C C C C C C C C C C C
	HOUNK	
MODIFIED COURSE INFORMATION	COURSE ANNEXES, FILES, AND OBJECTIVIS USED TO PROJECT ADDED MODULES	Lance Operations Fire Direction Assistant 250-15310 Di Cedion Prepare for operate, and perform operate, and perform operates and services on Radio Set ANYWE-de and prepare for operate Intercommunication is Set ANYWE-de and prepare for operate Intercommunication is Set ANYWE-Land Remote Control Set ANYGRA-19. CH430J · Communication and Engedures CE430M · Apply anti- jumming procedures and EN remodial measures CE430I Examination and CH410I Examination and CH410I Examination and
noo q	S/I RATIO	6:1 6:1 6:1 6:1
MODIFIE	ryfe instauc Tion	2
	MODIES	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7
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	1 2 2 E	ADD
	S.I.	
ATION	TVPL INSTRUC TION	
INFORMATION	1.000/15	
EXISTING COURSE	COURSE ANNEXES, FILES, AND OBJECTIVES	

Table C3-1 (Con't.)
course modification worksheit

MOS 15XX

COURSE Corps Support Missile System Cresmenter

EXISTING COURSE INFORMATION	MFORM	FATION					MODIFIE	p couf	MODIFIED COURSE INFORMATION				
COUNSE ANNEXES, FILLS, AND OBJECTIVES	**************************************	1791 148711UC 1101A	\$24 RA110	MCDU KA TION/ ULL! TON GODI	COURSE ANNEXES, FILES AND OBJECTIVES	HOURS	rypt INSTRUC TION	S/I	COURSE ANNEXES, FILCS, AND ONJECTIVES USLD TO PROJECT ADDED MODULES	HONSIS	TYPE INSTRUC 710M	SZI NATIO	FGC
									B2 TSEC/KY5/ Net Controller Teatming (VINSON)				
				QQ V	CCTIVA Prepare for opera- tion speech secure TSRC-KY	ę. ę.	7TV PE1	7 7	CC4 DVA - Prepair '01 Operation speech secure TSEC/Kr-57	÷ ;	7. 1314	ī. ī.	2402
				AUD	CC43VB - Operation of speech	7	132	r: 3					
				auv	CC4302 - Examination and Critique Sub Foral	4	- 1 - 2	;;	Cottogo	;	- ×	: •	
					D.5 Automated Baylgation Procedures				Survey Officers Course				1205
_				Урб	ASOXXX - Introduction to CSES primary navigation hystem	ર÷	ပင	1:07	ASUAR Introduction to Position Armith Determina- tion System (PADS)	e.æ	ပေရ	: 1 20:1	
				ADIO	ASOXXX - Operation of CSMS primary navigation system	7. 2	134	1:9	ASO7k1 - Operation of	- -	134	6:1	
				Apri	ASOXXX - Introduction to the CSMS secondary navigation bystem	e. 2.	υ Δ	.1	ASD NRT Introduction to the position Azimuth Determina- tion System (PADS)	¢,	ບ	7.	2501 2502 2503
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COURSE MODIFICATION WORKSHIFT

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1.6							.9 6.6	∪ a	: } 6: }	ASO7KN - PADS Practical Exercise and Review	6.6	ว เล	6:1		
1.6. C.	f the Monitor and Piting Device				MAJ					Harpson Meapon System Opera-	-				
4.2 E1 Weapon Control Pt 611 Weapon Control Pt 620	Missna - Operation of the Montoi programmer and Fiting Device		, H			MidSNA - Introduction to the CSWS fite control computer	0 C		1:9	J113-0131 (NAVY) Introduction to the Harpson Weapon System (HMS)	0.9	PE	1:1	3205	
4.2 EI Wickill - Jongstehensister 1.0 EI 6:1 Comprehensive Examination and Critique Examination and Critique Adul Sub Period (C.0 24.5 PE) 8.4 El 8.5 El 8.4 El 8.5 El 8.4 El 8.5		-				Mempor Control System Procedures	10.0		6:1	Weapon Control Procedures	10.0	PEJ	6:3		
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Table C3-1 (Con't.)

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System ž ğ S/I RATIO TYPE INSTRUC-TION HOOH COURSE ANNEXES, FILES, AND OBJECTIVES USED TO PROJECT ADDED MODULES MODIFIED COURSE INFORMATION S/I NATIO 20:1 : :; : ٠. و : ۲ Ξ 7 7 9 rype INSTRUC: TION ၁ ၁ နို့ ္<u>မ</u> ä ပ ۵ HOURS 2.5 16.8 z. e. c. **æ** ₹. D? Firing Platoon Procedures K Tactics, Combined Arms and Doctine Department M65PP Personnel Reliability COURSE ANNEXES, FILES, AND OCLECTIVES TW65LA · Course Orientation and Security Riespa - Position, Emplace, Fire, and Displace the SPL. Sub Total We55C Security in Combat M65TT - Terron sat Threat TW65SL - Saloty, Storage, and Firefighting Mi6505 Examination and Critique MOOTHEA FION/ DELTTON ž ¥ ž ž ÿ MAN IS 2011 611 = = . ; Ξ = ==== ~: INSTRUC FION EXISTING COURSE INFORMATION ນ ລີ⊈ <u>ສ</u> ر. 131 ວ ວ[ັ]ສ 22 U HOUNE 2.5 . ₩. 16.8 P. C. ъ. • ٠. TW65KY - Lance Nuclear Section Major Components ML65PA - Position/Emplace the Self-Propelled Lau ther [SPL]/ Launcher Zero Length (LZL) over the fitting point. TW 65LA - Course Orientation and Security TW654P Personnel Reliability COURSE ANNEXES, FILES, AND OBJECTIVES Dé Piring Platoon Procedures E Pactics, Compined Arms and Doctrine Department TM65SC Security in Combat 19465TT - Terrorist Threat TW61St - Safety, Storage, and Pirefighting WL6505 - Examination and Critique

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Table C3-1 (Con't.) COURSE MODIFICATION WORKSHEET

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Table C3-2

COURSE MODIFICATION WORKSHEET

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5 See Table Sec Table 2001 EVI NATED TYPE INSTRUC TION KOURS COURSE ANNEXES, FILES, AND OBJECTIVES USED TO PROJECT ADDED MODULES MODIFIED COURSE INFORMATION \$// = = = 1 9 --= 5 = <u>=</u> TYPE INSTRIUC TION ., ž ວິຊ ž ¥ Ü Ų o ~ ~ œ. .. \$. ~ 12.5 ÷ ₹. M.oSXX - Daily Preventive Maintenance Princellines on ESV Automotives. Missile Support Assembly and Ming Seas Assembly See SPL Drivers Preining Operation and Maintenawa Procedures MidSf. Course Introduc-MISSLM Introduction to Operation of the CSMS COURST ANNEXES, FILES, AND OLLECTIVES Sobtotal MLESMC - Perform Rerupply Vehicle Hoom Operations W.65-Fr. Introduction to CSMS Publications Misspik - Daily Pre-ventive Maintenance Procedures on the Carries M667 Launch Fixture, Riectronics, ML65MA Introduction to Operation of CHMS Vehicles D) Course Introduction 15XX 1 Lance Course 3 MODIFICA TION/ DELLTION CUDE ĭ I I Ī Ë Ē Z L ž Š \$/4 #A710 = = = --= = <u>-</u> TYPE IMBFRUC FIOM INFORMATION Ξ 5 Z 5 Z Ξ ٠ • v ÷ HOURE * -12.3 `` -Š Ŧ. ĕ MEGSIM - Daily Preventive Maintenance Procedures on the Carter MeC', Launch Fixture, Fire Central Computer, and NI-CAB EXISTING COURSE Missig Course introduction Ē Operation and Maintenance Procedures Missac - Perform Resupply Vehicle from Operations COURSE ANNEXES, FILES, AND CHUECTIVES MLOSMB Prepare the Self-Proposited Launcher (SPL) for Operation MESSED - Perform Daily Proventive Maintenance : the REV and Bling beam Assembly WLASLM introduction to Operation of the CSWS WE64-PL - Introduction to CSMS Publications MESSMA Introduction to Operation of CSWS Vehicites Coarse Introduction 15XX Reference Course <u>-</u> à

COURSE MODIFICATION WORKSHEET

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Table C3-2 (Con't.)

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Table C3-2 (Con't.) course Modification Worksheet

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 \mathcal{S}^{2} 2401 2403 2404 3205 S/I RATIO TYPE INSTRUC TION HOURS COURSE ANNEXES, FILES, AND OBJECTIVES USED TO PROJECT ADDED MODULES MODIFIED COURSE INFORMATION 111 011 S/I RATIO 6:1 TYPE INSTRUC-TION C PE2 PEl E1 HOURS 2.5 **‡**.2 1.7 CE430C - Prepare for operation, Operate, and Perform Operator Checks and Services on Radio Sets SINGARS 1V, PLRS JTIDS, AN/VIC-1, and VANDAL CE43CM - Apply Manual Antijamming Procedures and EW Remedial Measures Communication/Electronics COURSE ANNEXES, FILES, AND OBJECTIVES CE430J - Communication and Procedures CE4301 Examination and Critique 2 MODIFICA. TION/ DELETION Z X 21 1 2 SCI NATIO : ; 6: 1 6: 1 6:1 **:** :: TYPE MISTRUC: TION EXISTING COURSE INFORMATION C PE2 PE1 E2 HOURS 8.3 2.5 9. 4.2 CE430C - Prepare for Operation, Operate, and Perform Operator Checks and Services on Radio Sets ANVNEC-47, ANVNEC-46, and Prepare for Operation and Operate Intercommunications. Set ANVIC-1 and Data Communications Set ANVIC-1. Communication/Electronics COURSE ANNEXES, FILES, AND OBJECTIVES CE43CM - Apply Manual Antijamming Procedures and EW Remedial Measures CE4301 - Examination and Critique CE430J - Communication Procedures 5

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Table C3-2 (Con't.) course modification worksheet

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Navigation systems for
Emplacement and Travel.
(The systems are controlled
by a common control panel.
Software prompts have
been added to the software). ASOXXX - Introduction to CSWS Navigation Systems CC43VB - Operation of Speech Secure TSEC/KY-57 CC4302 - Examination and Critique COURSE ANNEXES, FILES, AND OBJECTIVES CC43VA - Prepare for Operation Speech Secure XYV-4 Vandal Subtotal Automa' to see 'mintion Proced: 14.5 S MODIFICA. TION/ DELETION CODE ĭ Z Z 3 3 :1 20:1 9:1 20:1 S.I. : : •: : Ξ. 6:1 6:1 TYPE IMSTRUC-TION EXISTING COURSE INFORMATION FE 급 PEl PEL Ξ ۵ ပ HOURS ∞. 4.2 4.2 ō. e. 3. ٠, ø. ASOXXX - Operation of CSW3 primary Navigation System ASOXXX - Operation of the CSMS Secondary Navigation System CC43VB - Operation of Speech Secure TSEC/KY-57 ASOXX - Introduction to CSWS Primary Navigation System ASOXX - Introduction to the CSWS Secondary Navigation System COURSE ANNEXES, FILES, AND OBJECTIVES CC43VA - Prepare for Operation Speech Secure TSEC/KY-57 CC4302 - Examination and Critique Automated Navigation Procedures S

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COURSE MODIFICATION WORKSHEET

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ASOXXX - CSMS Navigation Systems Evaluation and Critique	٠.	U	:1	HA.	ASOXXX - CSMS Navigation Systems Evaluation & Critique Subtotal	.9 6.6 18.7	13 C	1.1					
DéLaunch Control Procedures					D6Launch Control Procedures				MLRS System Deployment				
ML6SNA - Introduction to the CSMS Fire Control Computer	1.0	បន់	1.1	Z¥.	WE65NA - Introduction to the CSWS Fire Control Computer	2.5	C PE1	6:1	Annex A.1 Fire Control Operations	58.4			3204
ML65xx - Weapon Control Pro- cadures	10.0	٤.	6:1		WL65xx - Weapon Control Procedures	9.96.9	PEI	6:1					· -
					WLXXX - Manual Elevation and Travers Procedures	0.5	134	6:1					
WL6513 - Comprehensive Examination 6 of Critique	3.0	73	6:1	₹ 	ML6513 - Comprehensive Examination and Critique	12.0		6:1					
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**************************************	EXISTING COURSE INFORMATION	COURSE ANNEXES, FILES, AND COJECTIVES	D) Firing Plateon Procedures	Mt65FA - Position, Emplace, Fire, and Displace the SPL	M 6505 - Pramination	Critique constitution and	E Tactics, Combined Arms, and Doctrine Department	TW65LA - Course Orientation and Security	TW65PP - Personnol Reliability	TW65SC - Security fr. Combat	TW65TT - Telfor.st Threat	TW65SL - Safety, Storage, and Firefighting			

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Table C3-2 (Con't.) COURSE MODIFICATION WORKSHEET

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TW65LP - Perminsive Action

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Corps Support Missile System Crewmember

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		HOURS	15.0	25,0	10.0 10.0		o	0.01
		COURSE ANNIXES, FILES, AND OBJECTIVES	ML65XX - Inplace, Displace and Drive the SPL Under Usual and Unusal Conditions	MIGSXX - Dilve the MSV Under Usual and Unusual Confictions	Misch: - Evaniontion and Critique Subteres	9; CSWS Resupply and Transportation Operations	Wissus - Yackage, Beschage Test, Incpent, and Load Mighile onto 391, and 40.	Widsl2 - Emmination and Critique Subtotal
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Andrews of the contract of the	EXISTING COURSE INFORMATION	COURSE ANNEXES, FITCS, AND COURSE COURSE	•		WL6511 - Examination and Critique	D.J.CSMS Resupply and T.ansportation Operations	ML65ME - Package, Repackage, Test/Inspect, and Ludd Missita onto SPL and RV.	W.6512 - Examination and Critique

Table C3-3 (Con't.)

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	COURSE ANNEXES, FILES, AND OLUCTIVES	D4 Communication/Electronics CE430C - Prepare for Operation, Operate, and Perform Operator Checks and Services on Radio Sets SINCGAMS V, PLMS JTIDS, AN/VIC-1, and VANDAL	CK430J - Communication and Procedures	CRAICH - Apply Manual Antijamainy Procedures and EM Nemedial Menaures	CR4301 Kwamination and Critique
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EXISTING COURSE I	COURSE ANNEXES, FILES, AND OBJECTIVES	D4 Communication/Electronics CE4JGC - Prepare for Operation, Operate, and Perform Operator Checks and Services on Radio Sets AN/VRC-47, AN/VRC-46, and Prepare for Operation and Operate Intercommunica- tions, Set AN/VRC-1 and Data Communications Set AN/ASN-25	CR430J - Communication Procedures	CE41CM - Apply Manual Antijamang Procedures and RW Remedial Measures	Critique Critique

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		COUNSE ANNEXES, FILES, AND ORNECTIVES	CC43VA - Prepare for Operation Speech Secure KYV-4 Vandal	Speech Secure Take/KYV=4	CC4302 - Knamination and Critique Gubtotal	DS Automated Navigation Procedures	ABOXXX - Introduction to CSMS Navigation Systems	ABOXXX - Operation of CSMS Navigation systems for Emplacement and Travel. (The systems are controlled by a common control panel Software prompts have been added to the software)			
		MODIFICA TION/ DELETION CODE	2 X	Z	ž X		3	3			
		KA TIO	119	1:,	3		2017	<u>:</u>	2011	<u>.</u>	
	ATION	TYPE IMBTRUC- TION	74 PE.1	¥	¥		υa	ž	υA	¥	
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REFERENCE, BASELINE, 2	EXISTING COURSE	COURSE ANNEXES, FILES, AND OMECTIVES	CC43VA - Prepare for Operation Speech Secure TSEC/KY-57	Speech Secure TSEC/KY-57	CC4302 - Examination and Critique	DS Automated Navigetion Procedures	ASOXXX - Increduction to CSMS Primary Navigation System	AMOXXX - Operation of CSME Primary Mavigation System	ANOXXX - Introduction to the CSMS Secondary Navigation System	ASOXXX - Operation of the CSWS Secundary Navigation System	

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Table C3-3 (Con't.)

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COURSE MODIFICATION WORKSHEET

REFERENCE, BASELINE ...

EXISTING COURSE INFORMATION	INFORK	AATION					MODIFIED	D COURSE	RSE INFORMATION				
COURSE AMMERES, FILES, AND OBJECTIVES	98/PG+1	TVPE INSTRUCE. TRIM	EVI NATIO	MODIFICA TIDM/ DELEVION CODE	COURSE ANNEXIS, FILES, AND USECTIVES	PECKINS	1 VPE INSTRUC: TION	BATIO	COURSE ANNEXES, FILES, AND OBJECTIVES USED TO PROJECT ADDED MODULES	HOUNE	TYPE INSTRUC- TION	8/4 HATIO	# 50
ASOXXX - CSMS Navigation System Evalu-tion and Critique	•	Ų	=	KA.	ABOXXX - CSMB Navigation Bystems Evaluation & Clitique Subtotal		0 Z	119					
Détaunch Control Procedures		7			DeLaunth Control Procedures				MillS Syntam Deployment Course				
Michal Introduction to the CSMS Fire Control Cosputer	9.0	o ‡	=	3	MissNA - Introduction to the CSMS Fire Control Computer	e e e	, 1	= ;	Annex A.1 Fire Control Operations	÷.	· · · · · · · · · · · · · · · · · · ·		1204 3205
ML45KK - Weapon Control Pro- cedures	10.0	<u> </u>	-	KA.	Missix - Meason Control Procedures	 	£ 0						
					MIXXX Manual Rievarion and Travers Procedures	0.4	28.5	3					
ML651) Comprehensive Examination and Critique	•	ž	-	3	MESSIS - Comprehensive Examination and Critique	0.27	ş	3					
	- · · · · · · · · · · · · · · · · · · ·				(Boftware Prompts have been added to the Boftware).	egonda III.							
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TYPE MRTAUG. TYGA

HOUSE

COURSE ANNEXES, FILES, AND COURSE CONFESTIVES

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EXISTING COURSE INFORMATION

Table C3-3 (Con't.)

MODIFIED COURSE INFORMATION

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TWATER - Becarily in Combat

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TWOURL - Bafoty, Storago, and Firefloreing

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TM65LA - Course Orlenta-

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TWESLA - Course Offentation and Security

N Technos, Combined Arms, and Counties Department

Water - Personnel

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K Tection, Commined Arms, and Doorline Department

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COURSE MODIFICATION WORKSHEET REFERENCE, BASELINF 2

COURSE Corps Support Missile System Crewmember

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	J9,4	Α A							
	S/I RATIO								
	TYPE INSTRUC- TION								
	HOURS				<u>-</u> -				
COURSE INFORMATION	COURSE ANNEXES, FILES, AND OBJECTIVES USED TO PROJECT ADDED MODULES								
	S/I RATIO	20:1	20:1		6:1	-:		20:1 20:1 6:1 6:1	
MODIFIED	TYPE INSTRUC- TION	a	D PE1		E1	E3	_	C PEEI PEEI C P C C C C C C C C C C C C C C C C C	
	HOURS	6.	2.5		1.7	6.	13.0	20.0 110.6 110.6 11.3 3.3.4 10.9 24.0 24.0 4.0 76.0	
	COURSE ANNEXES, FILES, AND OBJECTIVES	TW65LP - Permissive Action	TW65MM - Emergency Destruc- tion	TW65LM	TW6501 - Examination and Critique	TW6502 - Examination and Critique	Subtotal	Academic Subtotal Administrative Outprocessing Graduation Practice/Gradua- tion Commanders Time Subtotal TOTAL	
	MODIFICA. TION/ DELETION CODE	NC	NC NC		ž	NC MC			
	SA NATIO	20:1	20:1		6:1	. :			
ATION	TYPE INSTRUC TION	Q	D		īa	£3			
INFORM,	HOURS	6.	2.5		1.7	6.			
EXISTING COURSE INFORMATION	COURSE ANNEXES, FILES, AND OBJECTIVES	TW65LP - Permissive Action	TW65MM - Emergency Destruction	TW65LM	TW6501 - Examination and Critique	TW6502 - Examination and Critique			

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Table C3-4

Corps Support Missile System Crewmember MOS 15xx

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COURSE MODIFICATION WORKSHEET

REFERENCE, BASELINE, 3

EXISTING COUNEE INFORMATION Discrete introduction NAMERIE, TILE, AND DISCRETE, STATE AND SOUR INTERCRETABLE AND DISCRETE INTEGRACE TO THE AMERICAL FILE AND DISCRETE INTRODUCTION NAMERICAL COUNEE INTRODUCTION NAMERICAL COUNTER INTROD														
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Course Introduction MidStJ Course Introduction MidStJ Course Introduction MidStJ Course Introduction MidStJ Course Introduction D1 Course Introduction D2 Operation and Maintenance Procedures D3 Operation and Maintenance Procedures D3 Operation and Maintenance D4 Operation and Maintenance D5 Operation and Maintenance D6 Operation and Maintenance D6 Operation and Maintenance D7 Operation and Maintenance D7 Operation and Maintenance D8 Operation D8 Op	COURSE ANNEXES, FILES, AND OBJECTIVES	HOURS	TYPE INSTRUC. TION		MODIFICA. TIOM/ DELETION CODE	COURSE ANNEXES, FILES, AND OBJECTIVES	HOURS	TYPE INSTRUC. TION	S/I RATIO	COURSE ANNEXES, FILES, AND OBJECTIVES USED TO PROJECT ADDED MODULES	HOURS	TYPE INSTRUC- TION	S/I RATIO	FGC
MidSiJ Course Introduction 9 C 11 MIN MidSiZ Course Introduct on the Case 12 C 13 MIN MidSiZ Course Introduct on the Case 12 C 13 MIN MidSiZ Course Introduction to the Case 12 C 13 MIN MidSiZ Course Introduction to the Case 12 C 13 MIN MidSiZ Course Introduction to the Case 12 C 13 MIN MidSiZ Course Introduction to Case 13 MIN MidSiZ Course Introduction 13 C 13 MIN MidSiZ Course Introduction 13 C 13 MIN MidSiZ Course Introduction 13 C 13 MIN MidSiZ Course Introduction 13 MIN MidSiZ Course Introduction 13 MIN MidSiZ Course 13 MIN														
Widesh Introduction .9 C :1 HIN Widesh Course Introduct .9 C :1 Operation of the CSNS 1.7 C :1 HIN Wides and thittenance on the CSNS						Conrse								
MyESMA Introduction to Operation and Maintenance Procedures WLESMA Introduction Operation and Maintenance Procedures WLESMA Introduction Operation and Maintenance Procedures WLESMA Introduction Operation and Maintenance Procedures WLESMA Introduction Operation and Maintenance Operation and Maintenance Oper	WL65LI Course Introduction		U	7.	Z	H	σ.	υ	1.					1210 - 112 ,
Particle	WL65LM Introduction to	1.7	υ	7.	NIN		7:	Ç	ี ::					
Operation and Maintenance Procedures MidSAM Introduction 1.7 C 11 NIE Conduction 1.8 C 12 NIE Conduction 1.9 C 11 NIE CONTUCTION 1.9 C 11 NIE CONTUCTI						Subtotal	2.6							
1.7 C		 _												
1.2 C 1.1 NC See SPL Drivers Training 5.0 PE1 6:1	NL65MA Introduction to Operation of CSNS vehicle	1.7	U	:	MIR	WL65WA Introduction to Operation of CSWS Vehicles	3.7	υ	า:					
1.7	Engage/Disengage the suspension lockout system on the SPL	·:	c	:	S S	See SPL Drivers Training File #'s WL65XX	_							16
- Introduction 1.7 C :1 MIN WL65-PL- Introduction 2.5 PE1 6:1 Publications 2.5 PE1 6:1 Loaily Preventive 12.5 PE1 6:1 Loaily Preventive 12.5 PE1 6:1 Loaily Preventive 12.5 PE1 6:1 Loaily Preventive Mid-Spatem	ML65MC - Perform Resupply Boom Operations	vs	PEl	6:1	21 1	WLS5MC - Perform Resupply Vehicle Boom Operations	5.0	PE1	6:1					2001
12.5 PE1 6:1 EL WL65PM - Daily Fre- 1.7 C :1 (Traver- ventive Maintenance 12.5 PE1 6:1 sing Procedures on the System) Fixture Electronic System and NI-CAD Battery EL		1.7	C PE1	1:9	z z z	WL65-PL- Introduction to CSWS Publications	2.5	C PE1	6:3					
System) HEMTT Engine, Launch Fixture Electronic System and NI-CAD Battery EL	WL65PM - Daily Preventive Maintenance Procedures On the Carrier M667, Launch		PE1	6:1	EL (Traver- sing	WL65PM - Daily Pre- ventive Maintenance Procedures on the	1.7	c PE1	6:1					See Table
EF	Fixture, Fire Control Computer, and NI-CAD Battery				System)	HEMTT Engine, Launch Fixture Blectronic System and NI-CAD Battery								
	WL65PD - Perform Daily Preventive Maintenance on the RSV and Sling Beam Assembly	, . _			<u>B</u> 1			***************************************			:			Se e rable

Table C3-4 (Con't.) course modification worksheet reference, <u>Baseline, 3</u>

COURSE Corps Support Missile System Crewmember

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	292	SPL RV 0606 1401 1804 1805 1805 1608			3FL 30 RSV 20	34 34
	S/I RATIO					
	TYPE INSTRUC- TION				,	
	HOURS				<u> </u>	
MODIFIED COURSE INFORMATION	COURSE ANNEXES, FILES, AND OBJECTIVES USED TO PROJECT ADDED MODULES					
noo q	S/I RATIO	6:1	6:1		6:1	6:1
MODIFIE	TYPE INSTRUC. TION	PEK	E1 E2		PE1	P81
	HOURS	35.0	8.4		0.9	10.0
	COURSE ANNEXES, FILES, AND OBJECTIVES	WL65XX - In place, Displace and Drive the SPL and RSV HEWTT in usual and unusual conditions	WL6511 - Examination and Critique Subtotal	D ₃ CSWS Resupply and Transportation Oper-tions	WL65ME - Package, Repackage, Test/Inspect, and Load Missile onto SPL and RV.	WL6512 - Examination and Critique Subtotal
	MODIFICA- TION/ ELETION CODE	PEl (Tracked Vehicle)	NIN		13	ជី
	S/I RATIO		6:1		6:1	6:1
ATION	TYPE INSTRUC. TION		ខ		PE1	188
INFORM	HOURS		8		7.0	3
EXISTING COURSE INFORMATION	COURSE ANNEXES, FILES, AND OBJECTIVES		WL6511 - Examination and Critique	D) CSMS Resupply and Transportation Operations	WL6SME - Package, Repackage, Test/Inspect, and Load Missile	V.6512 - Exumination and

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Table C3-4 (Con't.) COURSE MODIFICATION WORKSHEET REFERENCE, BASELINE . 3

COURSE Corps Support Missile System

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	FGC	2401 2403 2404 3205				
	S/I RATIO					
	TYPE INSTRUC. TION					
	HOURS					
COURSE INFORMATION	COURSE ANNEXES, FILES, AND OBJECTIVES USED TO PROJECT ADDED MODULES					
io con	S/I RATIO	6:1	6:1	::	6:1	
MODIFIED	TYPE INSTRUC. TION	PEJ	C PE2	ر ع	E 3 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	
	HOURS	4.2	8.3	1.3	ທ ດ	
	COURSE ANNEXES, FILES, AND OBJECTIVES	D4 Communication/Electronics CE430C - Prepare for Operation, Operate, and Perform Operator Checks and Services on Radio Sets SINCGARS V, PLRS JTIDS, AN/VIC-1, and VANDAL	CE430J - Communication and Procedures	CE43CM - Apply Manual Antijamming Procedures and EW Remedial Measures	CE4301 Examination and Critique	
	MODIFICA TION/ DELETION CODE	MIN	MIN	X II	Z Z	
	S/I RATIO	6:1	6:1	:: 	6:1	
ATION	TYPE INSTRUC TION	134	C PE2	£ 0	12 Z	
INFORM	HOURS	4.2	1.7	1.3	 	
EXISTING COURSE INFORMATION	COURSE ANNEXES, FILES, AND OBJECTIVES	CE430C - Prepare for Operation, Operate, and Perform Operate, and Perform Operate, and Perform Operate Checks and Services on Radio Sets any/VRC-47, AM/VRC-46, and Prepare for Operation and Operate Intercommunications. Set AM/VIC-1 and Data Communications Set AN/ASI-25	LE430J - Communication Procedures	CE43CM - Apply Hanual Antijamaing Procedures and Em Remedial Measures	Citrigue Examination and	

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COURSE MODIFICATION WORKSHEET

REFERENCE, FASELINE, 3

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FGC GG # 2402 2402 3205 2501 2502 2503 2504 3205 SUS TYPE INSTRUC-TION HOURS COURSI ANNEXES, FILES, AND OBJECTIVES USED TO PROJECT ADDED MODULES MODIFIED COURSE INFORMATION :1 S/I RATIO :1 6:1 6:1 6:1 TYPE INSTRUC-TION PEl TV PE1 PEl EI ပြ HOURS 10.0 4.2 ي ن 6.1 4.2 ASOXXX - Operation of CSWS
Navigation systems for
Emplacement and Travel.
(The systems are controlled
by a common control panel
Software prompts have
been added to the software). ASOXXX - Introduction to CSWS Navigation Systems COURSE ANNEXES, FILES, ALD OBJECTIVES CC4302 - Examination and Critique CC43VA - Prepare for Operation Speech Secure KYV-4 Vandal Subtotal CC43VB - Operation of Speech Secure KYV-4 DS Automated Navigation Procedures MODIFICA TION/ DELETION CODE Z Z X Z 3 3 EATIO :1 6:1 :1 20:1 6:3 :1 6:1 6:1 6:1 TWE INSTRUC FION EXISTING COURSE INFORMATION T PEl II. PEl :3 PE ບຂ ပေရ HOURS **8**.4 ٠. æ 4.2 6.1 4.2 ი. ფ 4.4 ASOXXX - Operation of CSWS Primary Navigation System ASOXXX - Operation of the CSMS Secondary Navigation System CC43VB - Operation of Speech Secure TSEC/KY-57 ASOXX - Introduction to the CSWS Secondary Navigation System ASOXX - Introduction to CSWS Primary Navigation CC43VA - Prepare for Operation Speech Secure TSEC/KY-57 COURSE AMNEXES, FILES, AND OBJECTIVES Automated Navigation Procedures CC4302 - Examination and Critique 90

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Table C3-4 (Con't.) course modification worksheet

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55 3204 3205 TYPE INSTRUC TION HOURS 58.4 COURSE ANNEXES, FILES, AND OBJECTIVES USED TO PROJECT ADDED MODULES MLRS System Deployment Course Annex A.1 Fire Control Operations MODIFIED COURSE INFORMATION S/I RATIO 6:1 :. 6: i 1:5 6:1 TYPE INSTRUC. TION . E1 PE1 C c PE1 PEI ប ជី .9 6.6 18.7 36.9 .5 3.0 12.0 58.4 WLXXX -- Manual Elevation and Traverse Procedures ASOXXX - CSWS Navigation Systems Evaluation & Critique D6Launch Control Procedures COURSE ANNEXES, FILES, AND OBJECTIVES Subtotal WL65NA - Introduction to the CSWS Fire Control Computer Subtotal Wi65xX - Weapon Control Procedures WL6513 - Comprehensive Examination and Critique (Software Prompts have been added to the software). MODIFICA-TION/ DELETION CODE ¥ Æ 3 S/I RATEO Į: 9 6:1 6:1 : 1 TYPE INSTRUC TION EXISTING COURSE INFORMATION ပ ၁ <u>ဒ</u> 2 E HOURS 6.9 **9** ~ 2 3.0 ASOXXX - CSWS Havigation Systems Evaluation and Critique WL65NA - Introduction to the CSWS Fire Coatrol Computer COURSE ANNEXES, FILES, AND OBJECTIVES N.,55xx - Weapon Control Pro-cr dures DéLaunch Control Procedures MLM513 - Comprehensive Extm:Cation and Critique

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Table C3-4 (Con't.) COURSE MODIFICATION WORKSHEET

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	S/I RATIC														
	TYPE INSTRUC. TION						 								<u>-</u>
	HOURS														
MODIFIED COURSE INFORMATION	COURSE ANNEXES, FILES, AND OBJECTIVES USED TO PROJECT ADDED MODULES														
noo a	1.11 RATIO		:1 6:1				r .	.	6:1	7:	20:1				
MODIFIE	TYPE INSTRING. TION		c PE1				υ	υ	C PE1	U	۵				
_	нопез		0.0	0.9			6,	e,	1.7	ø;	o.				
	COURSE ANNEXES, FILES, AND OBJECTIVES	D7 CSWS Display Aided Fault Recognition	RCXXXX - CSWS Fault Recognition	Subtotal		E Tactics, Combined Arms, and Doctrine Department	TW65LA - Course Orienta- tation and Security	TW65PP - Personnel Reliability	TWASAC - Security in Combat	TW65TT - Terrorist Threat	TW655L - Safety, Storage, and Firefighting				
	MDDIFICA TION/ DELETION CODE	ADU					¥	Š	S S	ž	ž				
	S/I RATIO		6:1		- · · · · · · · · · · · · · · · · · · ·	-		-	6:1	τ.	20:1				
		1				~-			PEI						
ATION	TYPE INSTRUC. 710N		C		ធ		•	U	<u>ت</u> ن	O	۵			_	
EXISTING COURSE INFORMATION	TYPE HOURS INSTRUC		.5 C C 24.5 PE1		16.8		6 .	ø;	D 8.1	٠ •	ø.		· · · · · · · · · · · · · · · · · · ·		

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Table C3-4 (Con't.) COURSE MODIFICATION WORKSHEET REFERENCE, BASELINE, 3

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	\$/I RATIO				- 									
	TYPE INSTRUC TION			<u></u>										,
	HOURS													
MODIFIED COURSE INFORMATION	COURSE ANNEXES, FILES, AND OBJECTIVES USED TO PROJECT ADDED MODULES													
D COU	\$M PATIO	20:1	20:1		6:1	1		20°21 6611 6611 6611 6611 6611 6611 6611 6	_					
MODIFIE	TYPE INSTRUC- TION	a	D FE1		ដ	ខេ		C PEI PEI TV TV TV TV EI						
	\$HNG#	6.	2.5		1.7	e:	13.0	18.3 13.3 1.3 35.4 5.9	204.2	24.0	0. 4	28.0	272.2	
	COURSE ANNEXES, FILES, AND OBJECTIVES	TW65LP - Permissive Action	TW65MM - Rawrgency Destruc- tion	TW65LM	TW6501 - Examination and Critique	TW6502 - Examination and Critique	Subtotal	Acadebic	Subtotal	Administrative Outprocessing	Graduation Practice/Gradun- tion	Commanders Time Subtotal	TOTAL TOTAL	
	MODIFICA- TION/ DELETION CODE	Š	NC NC		ñ	ž								
	5/1 RATIO	20:1	20:1		6:1	1.								
ATION	TYPE INSTRUC TION	a	PE1		ផ	ខ								
INFORM	MOURS	6.	2.5		1.7	o,	170.8							
EXISTING COURSE INFORMATION	COURSE ANNEXES, FILES, AND OBJECTIVES	TW65LP - Permissive Action	TW654M - Emergency Destruction	TW65LM	TW6501 - Examination and Critique	TW6502 - Examination and Critique	TOTAL ACADEMIC							

Table C3-5

COURSE MODIFICATION WORKSHEET

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REFERENCE, BASELINE

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	1:5	5:1	5:1 5:1 5:1	5:1 5:1 5:1	5:1 5:1 5:1	5:1 5:1 5:1	5:1 5:1 5:1
-		ာ အေ	2 EB EB	2 22 23	2 13 13 13 13 13	. 134 134 134 134 134 134	S 13 13 13 13 13 15 15 15 15 15 15 15 15 15 15 15 15 15
-	7	?; œ.	7 80 7	2. 8. 7. 2.	32.0	2. 1. 7 32.0	
		Course Introduction Introduction to the CSMS Organizational Maintenancs Technical Manual	Course Introduction Introduction to the CSMS Organizational Maintenance Technical Manual Care and Use of Hand Tools	Course Introduction Introduction to the CSMS Organizational Maintenancs Technical Manual Care and Use of Hand Tools and Tool Kits Organizational Maintenance on the Launch Fixture	Course Introduction Introduction to the CSWS Organizational Maintenance Technical Manual Care and Use of Hand Tools and Tool Kits Organizational Maintenance on the Launch Pixture on the RSV Winch and Crane	Course Introduction Introduction to the CSMS Organizational Manual Care and Use of Hand Tools and Tool Kits Organizational Maintenance on the Launch Pixture Organizational Maintenance on the RSV Winch and Crane	Course Introduction Introduction to the CSMS Organizational Maintenancs Technical Manual Care and Use of Hand Tools and Tool Kits Organizational Maintenance on the Launch Pixture on the RSV Minch and Crane Organizational Maintenance on the RSV Minch and Crane
		M M M	MIN MAJ	M MAL MIN N N N N N N N N N N N N N N N N N N	MIN MAJ. MIN MIN MAJ.	WIN MIN MAJ.	MAJ MAJ MAJ MAJ MAJ
L		5:1	5:1	5:1	5:1	5:11 5:11 5:11 5:11	5:1
L		ာ ad	BB 184	ວ IBA IBA		רנ BB 134 134 134 134 134 134 134 134 134 134	
	<u> </u>	ş. c.1		1.7 1.7 1.7		72 32 77 7	32 32
		043-F4 (ASI #3) issile Mechanic Course Introduction Introduction to the as Detector, and 25-485-20	13851e Mechanic Course Introduction Introduction to the ias Detector, and 125-485-20 Core and Use of Hand	issaile Mechanic Course Introduction Introduction to the as Detector, and 125-485-20 Cere and Use of Hand nd Tool Kits Maintenance on Carri Equipment (Launch)	Missile Mechanic A: Course Introduction : Introduction to the Gas Detector, and 425-485-20 : Cere and Use of Hand and Tool Kits : Maintenance on Carri d Equipment (Launch e) Organizational Main- e on the Loader-Frans- Handling Unit	Missile Mechanic A Course Introduction Introduction to the Sas Detector, and 425-485-20 Cere and Use of Hand and Tool Kits Maintenance on Carrid Equipment (Launch b) Organizational Main- e on the Loader-Trans- Handling Unit nance on the Mobility K	From: 043-P4 (ASI 93) Lance Missile Mechanic Annex A WE640A: Course Introduction WL640B: Introduction to the Multi Gas Detector, and TM 9-1425-485-20 WL640C: Crre and Use of Hand Tools and Tool Kits WL640C: Maintenance on Carrier Hounted Equipment (Launch Fixture) WL640E: Organizational Main- trance on the Loader-Trans- porter Handling Unit Walntenance on the Mobility Kit WL640G: Organizational Maintenance on the Mobility Kit WL640G: Organizational Healthenance on the Tripod Holst, Sling Beam, and Firing Device
		ttion .9 C 5:1 MIN Course Introduction .9 C 5:1 the 1.7 PE: 5:1 MAJ Introduction to the CSWS .8 PE: 5:1 Technical Manual	tion .9 C 5:1 MIN Course Introduction .9 C 5:1 The 1.7 PE; 5:1 MAJ Introduction to the CSMS .8 PE; 5:1 Technical Manual Hand 1.7 PE; 5:1 MIN Care and Use of Hand Tools 1.7 PE; 5:1	tion .9 C 5:1 MIN Course Introduction .9 C 3:1 the 1.7 PE1 5:1 MAJ Introduction to the CSWS 0.9 PE1 5:1 Technical Manual [Hand 1.7 PE1 5:1 MIN Care and Use of Hand Toolh 1.7 PE1 5:1 Carrier 12:0 PE1 5:1 MIN Organizational Maintenance 12:0 PE1 5:1	tion .9 C 5:1 MIN Course Introduction .9 C 5:1 Technical Manual Filand 1.7 PE1 5:1 MIN Care and Use of Hand Toolh 1.7 PE1 5:1 Cartier 32.0 PE1 5:1 HIN Organizational Maintenance 12.0 PE1 5:1 Main- 32.0 PE1 5:1 HIN Olganizational Maintenance 12.0 PE1 5:1 Carine 13.0 PE1 5:1 HIN Olganizational Maintenance 12.0 PE1 5:1 Carine 13.0 PEI 5:1 HIN Olganizational Maintenance 12.0 PE1 5:1 Carine 13.0 PEI 5:1 HIN Olganizational Maintenance 12.0 PE1 5:1 Carine 13.0 PEI 5:1 HIN Olganizational Maintenance 13.0 PE1 5:1 Carine 13.0 PEI 5:1 HIN Olganizational Maintenance 13.0 PE1 5:1	1.7 PE1 5:1 MAJ Introduction .9 C 5:1 1.7 PE1 5:1 MAJ Introduction to the CSMS	1.7 PE1 5:1 MAJ Course Introduction .9 C 3:1 1.7 PE1 5:1 MAJ Course Introduction to the CSMS

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Table C3-5 (Con't.) COURSE MODIFICATION WORKSHEET

REFERENCE, BASELINE

₽ 32 = SVI RATIO 12:1 6:1 3:1 1:1 6:1 6:1 6:1 6:1 6:1 3:1 3:1 TYPE INCTRUC-TION C C 2 2 2 3 3 3 3 o EE C C E E C PEI 21.0 HOURS 3.3 3.0 2.00 5.0 From: Navy Course J-113.0127
Harpoon Weapon System
{Surface Application}
Maintenance
Lesson Topic 3.5. Introduction to Pault Instation Lesson Topic 3.9 (in Part):
Data Conversion Unit
BIT Masks
Built-In-Tests
System Fault Isolation
Examination From: Navy Course A-113-0044 Gun Mount 5"/54 HK 42 MOD 9 & 10 Lesson Topic 16.1: Gun System Component Arrange-ment and Function COURSE ANNEXES, FILES, AND OBJECTIVES USED TO PROJECT ADDED MODULES Subtotal Subtotal Subtotal Subtotal Subtotal Lesson Topic 3:16: System Fault Isolation Lesson Topic 3.8: Data Processor Computer MODIFIED COURSE INFORMATION E/I RATIO 5:1 5:1 5:1 5:1 5:1 5:1 TVPE INSTRUC-TION CPEN C PE1 ပ ပ[ု]ရွိ အ PEl ر ا E2 3.3 10.0 6.0 HOURS 3.0 2:0 6.0 CSNS Fire Control System: Introduction to Trouble-shooting Fire Control System COURSE ANNEXES, FILES, AND OBJECTIVES Subtotal CSMS Fire Confrol System CSWS Launcher Drive System Launchur Drive System Cumponent Arrangement and Punction Troubleshooting CSNS Fire Control System Subtotal Subtotal Subtotal Examination and Critican Subtotal Data Conversion Unit BIT Masks Built-In-Tests System Troubleshooting Examination Data Processor Computer MODIFICA-TION/ DELETION COOR QQV á E/I TYPE INSTRUC-TION EXISTING COURSE INFORMATION E2 HOURS 0.0 COURSE ANNEXES, FILES, AND OBJECTIVES WL6406: Exam'nation and Critique

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Table C3-5 (Con't.) course modification worksheet REFERENCE, BASELINE.

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EXISTING COURSE INFORMATION	INFORM	ATION				_	MODIFIE) COUF	MODIFIED COURSE INFORMATION				
COURSE ANNEXES, FILES, AND OBJECTIVES	ноия	TYPE INSTRUC TION	8.71 RATIO	MODIFICA TIDN/ DELETION CODE	COURSE ANNEXES, FILES, AND OBJECTIVES	HOURS	TYPE INSTRUC- TION	8/1 BAT40	COURSE ANNEXES, FILES, AND OBJECTIVES USED TO PROJECT ADDED MODULES	HOURS	TYPE INSTRUC: TION	SVI RATIO	// DB
					Launcher Drive System Nydraulic Circui's	3.2	U	5:1	Lesson Topic 16.1: Gun Laying Systom Hyd:aulic Circuits	4.1	3	12:1	
					Traverse & Dievation Trouble- shooting Subtotal	00.0	c PE1	5:1	Lesson Topic 16.7: Train 6 Elevation Fault Isolation Sibtotal	2.5	PEI	6:1	
					Traverse & Elevation Operation 10.0 Subtotal CSWS Launcher Drive System	10.0	PE1	5:2	Lesson Topic 16.9. Train & Elevation Operation	1.1.	134	1:9	
Total Academic Time	71.8				Total Academic Time	124.9							
Administrative Time					Administrative Time								
Inprocessing Outprocessing Commandant's Time	0.0.5.				Inprocessing Outprocessing Commandant's Time	4.0							
Total Monacademic Time	8.2				Total Nonacademic Time	8.2							
Total Course Time	80.0				Total Course Time	113.1							
Training Time in Man-Days	10.0				Trainng Time in Man-Days	16.6							
Instructional Breakdown C .9 PE: 70.9 PE: 70.9 Total 71.8 Note: 1. Actual student/instructor ratios were not available for 043-P4. Natios used were taken/from either DA PAN 570-558 or TRADOC Cir. 351-12.	for ratio	M WE'E NO	r availab 570-558	Je for 04 or THADOC	Instructional Breakdown C 16.4 PE1 105.5 E1 15.9 Total 124.9 13-F4.								
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Table C3-6
COURSE MODIFICATION WORKSHEET
REFERENCE, BASELINE 2

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	\$7 RAYIO									20:1		
	TYPE INSTRUC- TION									C PB1		
	HOURS									2.0 6.0 8.0		
MODIFIED COURSE INFORMATION	COURSE ANNEXES, FILES, AND OILECTIVES USED TO PROJECT ADDED MODULES								Prom: Patriot System Mechanic Course (No Course Number)	Annex Di RC 4.11508 Perform Maintenance Cn the Guided Missile (GM) Canister Subtotal		
noo a	S/I RATIO		1,15	5:1	5:1	_	5:3		7:5	511		
MODIFIE	TYPE INSTRUC- TION		U	PEI	PEI		S S		PE	2 PE1		
	\$ HOOH		ō.	•	1.7		32.0		٠.	0 2, 0		
	COURSE ANNEXER FILES, AND OBJECTIVES		Course Introduction	Introduction to the CSNS Organizational Maintenancy Technical Manual	Cafe and Use of Hand Tools and Tool Kits		Organizational Maintenance on the RSV Winch and Crane		Organizational Maintenance on the Piring Device	Organizational Maintenance on the Canister Subtotal		
	MODIFICA TION/ OFFETION COUR		Z T	Y	Z I	<u></u>	z	78	HAJ	VDD		
	247.5		7:5	ş.	7.5	1:5	\$11	5.1	.; .;			
ATION	TYPE INSTRUC TION	-	υ	P&I	Ta.	PE1	<u></u>	P ES	34	34		
INFORM	HOURS		•	1:3	1.7	32.0	32.0	÷	1.3	e.		
EXISTING COURSE INFORMATION	COURSE ANNEXES, FILES, AND OBJECTIVES	Prom: 043-P4 (ASI #3) Lance Missile Mechanic	ME640A: Course Introduction	WL640B: Introduction to the Multi Gas Detector, and TM 9-1425-485-20	WL640C: Care and Use of Hand Tools and Tool Kits	ML640D: Maintenance on Carried 32.0 Mounted Equipment (Launch Fixture)	Wistor: Organizational Main- trnance on the Loader-Trans- porter Handling Unit	WL640P; Organizational Maintenance on the Mobility Kit	Misteria Organizational Maintenance on the Tripod Hoist, Sliny Beam, and Pfring Device	ML640H: Organizational Maintenance on the Missile Main Assemblage and Shipping and Storage Container		

Table C3-6 (Con't.)
course modification worksheet
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	90	33										=				
	SVI RATIO		177		353			33		37			12:1	<u>.</u>		
	TYPE INSTRUC- TION		0 <u>8</u> 2		. ii ii		υυ	ĩ g		. 1			0	3		
	HOURS		3.0	10.0	2.0	4.0	0.1	7.0	0.00	5.0	o.		2.3	S Section Sect	œ.	
IRSE INFORMATION	COURSE ANNEXES, FILES, AND OBJECTIVES USED TO PROJECT ADDED MODULES	From: Navy Course J-113-0127 Harpoon Weapon System (Surface Application)	Leanon Topic 3.6: Intro- duction to Pault Isolation	Subtotal	Leason Topic 3.8: Data Processor Computer	Subtotal	Leason Topic 3.9 (In Part): Data Conversion Unit BIT Masks Bullt-In-Tests	40 P	Subtotal	Lesson Topic: Jilé: System Pault Isolation	Subtotal	0044 Gun Mount 5"/54 MK 42	MOD 9 4 10 Leadon Topic 16:11 Gun	ment and Function	Subtotal	
noo a	SA RATIO	make in the fewers and the second	77 86		2.2.			22		51.1			1; 8:1	217		
MODIFIED COURSE	TYPE INSTRUC TION				2 E		υ υ	, 2 2		PK1			υ	FES		
	KOOKS	0 ° 0	3.0	6.0	1.0	3.0	0.0	3.0	15.0	6.0	30.0		9:	7.7	2.0	
	COURSE ANNEXES, FILES, AND OBJECTIVES	Examination and Critique	Introduction to Trouble- shooting Fire Control System	Subtotal	Data Processor Computer	Subtotal	Data Conversion Unit:	System Troubleshooting Examination	Subtotal	Troubleshooting CSMS Fire Control System	Subtotal CSMS Fite Control System	CSMS tauncher Drive System:		Component Arrangement and Punction	Subtotal	
	MODIFICA TIOM/ OFFITTON CODE	нальфинування в в в в в в в в в в в в в в в в в в	è									ADD	3			
	£/il RATIO	AND THE RESERVE TH														
ATION	TYPE INSTRUC- TIUN	For the second s														
INFORM	110011	0.0														
EXISTING COURSE INFORMATION	COURSE ANNEXES, FILES, AND OBJECTIVES	W.Letoei Examination and Crilique														

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COURSE MODIFICATION WORKSHEET Table C3-6 (Con't.)

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Ø 0:0 #/I 12:1 Ţ TYPE INSTANCE TION o Z 2 HOUR 2 2 2 2 7. 7 Lesson Topic 16.9: Train & Rievation Operation Resson Topic 16.7: Train & Rievation Pault Isolation COURSE ANNEXES, FILES, AND OBJECTIVES USED TO PROJECT ADDED MODULES Subtotal Leason Topic 16.3: Gun Laying System Hydraulic Circults MODIFIED COURSE INFURMATION 74 74 16 3. 3: 33 TYPE INETHUG: TION ر يون 7 ψ. 4.0 1.0 HOOM 3.0 = 47.0 . . ÷:: COURSE ANNEXES, FILES, AND COURSE COURSE Subtotal Wlavation Troublembooting Training Time in Man-Days natructional Breakdown Klovation Operation Subtotal CSWS Launcher Grive System Potel Movedademic Time Laurcher Drive System Hydraulic Circuits Inprocessing Cutprocessing Commandant's Time rotal Academic Time Ideas secuentice Taxes fotal Course Time Notes 1. Actual atudent/instruction fation were not available tor Obs.P4.
Ration used were taken from estater to real 570-558 or TRADO Cir. 351-12. MUDIFICA-TION/ DELETION CODE ₹ ž É ES NATE TYPE METROC TION EXISTING COURSE INFORMATION 0.4 HOOM 0.0 10.0 COURSE ANNEXES, FILES, AND OBJECTIVES staining Time in Man-Days emergetone bresidens - - Nonecesteria Time Inprocessing Outprocessing Commandant's Time Total Academ.c Time Administrative Time Total Gostse Time C ... Tutal 71.#

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EXISTING COURSE INFORMATION	INFORM	ATION		•		-	AODIFIEC	COUF	MODIFIED COURSE INFORMATION				
COURSE ANNEXES, FILES, AND OBJECTIVES	HOURS	TYPE INSTRUC TION	S/I RATIO	MODIFICA TION/ DELETION CODE	COURSE ANNEXES, FILES, AND OBJECTIVES	HOURS	TYPE INSTRUC TION	S/I RATIO	COURSE ANNEXES, FILES, AND OBJECTIVES USED TO PROJECT ADDED MODULES	HOURS	TYPE INSTRUC TION	S/I RATIO	# 99
From: 043-F4 (ASI 83) Lance Missile Nechanic													N/A
Course Introduction	6.	υ	5:1	2 1 1	Course Introduction	6.	υ	1:5					
WL640B: Introduction to the Multi Gas Detector, and TM 9-1425-485-20	1.7	PE1	5:1	MAJ	Introduction to the CSWS Organizational Maintenance Technical Manual	œ,	134	5:1					N/N
WL640C: Care and Use of Eand Tools and Tool Kits	1.7	134	5:1	N I N	Care and Use of Hand Tools and Tool Kits	1.7	ıad	5:1					Ψ.
WL640D: Maintenance on Carried 32.0 Mounted Equipment (Launch Fixture)	32.0	PEI	5:1	73									
WL640E: Organizational Main- trnance on the Loader-Trans- porter Handling Unit	32.6	PEI	5:1	NIE	Organizational Maintenance on the RSV Winch and Crane	32.0	138	5:1					RSV 20
WL640F; Organizational Maintenance on the Mobility Kit	6,	PEI	5:1	Tig .									
WL640G: Organizational Maintenance on the Tripod Hoist, Sling Beam, and Firing Device	1.7	PE1	5:1	MA.	Organizational Maintenance on the Firing Device	٠	PE1	5:1	From: Patriot System Mechanic Course (No Course Number)				3204
ML640H: Organizational Maintenance on the Missile Main Assemblage and Shipping and Storage Container	6.	PE1	3:5	АЪР	Organizational Maintenance on the Missle and Canister Subtotal	2.0 6.9 8.9	PE.	1:5	Annex D: RC 4.11508 Perform Maintenance on the Guided Missile (GM) Canister Sub Total	8.0	c PE1	20:1 6:1	33
							<u></u>						

Table C3-7 (Con't.)

COURSF MODIFICATION WORKSHEET

REFERENCE, BASELINE 3

99 32 3 S/I RATIO 12:1 6:1 6:1 3:1 6:1 6:1 6:1 6:1 6:1 3:1 6:1 3:1 TYPE INSTRUC-TION C PE1 C C FEI C PE1 C EE FEI HOURS 5.0 1.0 5.8 1.0 21.0 7.0 30.0 10.0 3.3 From: Navy Course J-113-0127
Harpoon Weapon System
(Surface Application)
Haintenance
Lesson Topic 3.6: Introduction to Pault Isolation Lesson Topic 3.9 (In Part):
Data Conversion Unit
BIT Masks
Built-In-Tests
System Pault Isolation
Examination From: Navy Course A-113-0044
Gun Mount 5"/54 MK 42
MOD 9 & 10
System Component Arrange-ment and Function COURSE ANNEXES, FILES, ANC OBJECTIVES USED TO PROJECT ADDED MODULES Subtotal Subtotal Subtota] Subtotal Lesson Topic:3:16: System Fault Isolation Lesson Topic 3.8: Data Processor Computer MODIFIED COURSE INFORMATION SAI 5:1 5:1 5:1 5:1 5:1 5:1 5:1 5:1 TYPE INSTRUC: TION C PE1 C PE1 C PE; **្ឋា** PEI E2 2.0 HOURS 1.0 10.0 3.0 15.0 5.0 3.0 6.0 0.0 6.0 2.9 CSWS Fire Control System: Introduction to Trouble-shooting Fire Control System COURSE ANNEXES, FILES, AND OBJECTIVES 75WS Launcher Drive System: Sublotal CSWS Fire Control System Launcher Dilve System Component Arrangement and Function Subtotal Subtoțal Troubleshooting CSWS Fire Control System Subtotal Subtotal Examination ind Critique Data Conversion Unit BIT Masks Built-In-Tests System Troubleshooting Examination Paca Processor Computer MODIFICA. TION/ DELETION CODE ADD à S/I RATIO TYPE INSTRUC. TION INFORMATION **E**2 HOURS 0.0 COURSE COURSE ANNEXES, FILES, AND OBJECTIVES WL6406: Examination and Critique EXISTING

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COURSE MODIFICATION WORKSHEET REFERENCE, BASELINE Table C3-7 (Con't.)

Type COURSE ANNEXES, FILES, AND Hours Type Manual Course Time Type Type Manual Course Time Type Type	EXISTING COURSE INFORMATION	ORMATION				~	MODIFIEI	COUF	MODIFIED COURSE INFORMATION				:
HAJ Launcher Drive System 1.1 C			S/I RATIO	MODIFICA. TION/ DELETION CODE	COURSE ANNEXES, FILES, AND OBJECTIVES		TYPE INSTRUC: TION	S/F RATIO	COURSE ANNEXES, FILES, AND OBJECTIVES USED TO PROJECT ADDED MODULES	HOURS	TYPE INSTRUC- TION	SA) RATIO	# 99
#A.J Elevation Troubleshooting 1.0 C Subtotal 4.0 Subtotal 5.0 PE1					Launcher Drive System Hydraulic Circuits	1.1	U	5:1	Lesson Topic 16.3: Gun Laying System Hydraulic Circuits	4.1	U	12:1	
### Elevation Operation 5.0 PE1				MA.3	Elevation Troubleshooting Subtotal	1.0	C PE1	5:1 5:1	Lesson Topic 16.7: Train & Elevation Fault Isolation Subtotal	8.3 2.5 10.8	C PE1	12:1 6:1	
11.8 4.0 4.0 1.2 Commandant's Time 8.2 80.0 Total Nonacdemic Time Total Nan-Days Training Time in Man-Days					Elevation Operation Subtotal CSMS Launcher Drive System	5.0	PEI	5:1	Lesson Topic 16.9: Train 6 Elevation Operation	14.1	PE1	6:1	· · · · · · · · · · · · · · · · · · ·
Administrative Time 4.0 4.0 6.0 8.2 80.0 Total Nonacademic Time Total Nonacademic Time Total Course Time Training Time in Man-Days Instructor ratios were not avallable for 043-F4. Laken from either DA PA, 570-558 or Trabor Cir. 351-12.		<u></u>			Total Academic Time	07.9							
4.0 Courprocessing 4.0 Commandant's Time 8.2 Total Nonacademic Time 10.0 Training Time in Man-Days Instructor ratios were not available for 043-F4. Laken from either DA PA' 570-558 or Tradoc Cir. 351-12.	crative Time				Administrative Time								
80.0 Total Nonacademic Time 10.0 Training Time in Man-Days Instructional Breakdown C 12.6 PEI 7.3 PEI 7.3 EI 3.0 Total 87.9 Taken from either DA PA 570-558 or TVADOC Cir. 351-12.	1	0001			Inprocessing Outprocessing Commandant's Time	0.4.0							
10.0 Training Time in Man-Days 10.0 Training Time in Man-Days Instructional Breakdown C 12.6 PE: 72.3 E: 3.0 Total 87.9 Laken from either DA PA, 570-558 or TWDOC Cir. 351-12.		2			Total Nonacademic Time	8.2							
Instructor ratios were not available for 043-F4. Laken from either DA PA, 570-558 or TVADOC Cir. 351-12.		•			Total Course Time	96.1							
/instructor ratios were not available for O		 -		 	Training Time in Man-Days	12.0							
10.9 20.9 21.9 1. Actual stadent/instructor ratios were not available for 043-F4. Ratios used were taken from either DA PA. 570-558 or TADOC CIT. 351-1	:ional Breikdown				Instructional Breakdown								
1. Actual student/instructor ratios were not available for 043-F4. Ratios used wer taken from either DA PA, 570-558 or TVADOC CIr. 351-12.	8. 6.05												
1. Actual student/instructor ratios were not available for 043-F4. Ratios used worr taken from either DA PA, 570-558 or TVADOC CIF. 351-12.	51.9												
	. Actual student/instructor Ratios used wer taken from	ratios vert	not avalla? A. 570-558	Je for De	13-F4.								
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EXISTING COURSE	INFORMATION	ATION		·			MODIFIED		COURSE INFORMATION				
COURSE ANNEXES, FILES, AND OBJECTIVES	HOURS	TYPE INSTRUC- TION	25. RATIO	MODIFICA. TION/ DELLTION	COURSE ANNEXES, FILES, AND OBJECTIVES) HOURS	TYPE INSTRUC: TION	S.I. RATIO	COURSE ANNEXES, FIYES, A'40 CBJECTIVES USED 10 PROJECT ADDED WODILES	ž	rytrE OASTRUC. TION	SVI BATIO	g 00
Annex A: Prerequisite Skills and Knowledges Subtotal	4.0	S. S.	6:1 3:1	NC	Annex A: Pretaguisite Skills and Knowledges Sublotal	4.0 340.3 344.3	ပတ္သ	313					,g ,a
Annex B: Lance Guided Missile System System	3.2 3.2 54.8 7.0 11.1 3.3 116.0	C TV TV TV PEI E E E E E E E E E E E E E E E E E E	6:11	S S	Annex B: Lance Guided Missile System Subtral	35.8 3.2 54.8 7.6 11.1 3.1	7. 17. 10. 10. 10. 10. 10. 10. 10. 10. 10. 10						34, 34, 34, 34, 34, 34, 34, 34, 34, 34,
Annex C: AN/TSM-93, Operation and Operator Maintenance	199.0 6.9 6.9 1.6 3.0 32.9 44.2 44.2 28.1	C D F F P P P E I E I E I	6:1 6:1 6:1 6:1 6:1	X Y	Annex C: AN/TSM-93, Operation and Operato: haintenance Subtotal	199.0 6.9 6.9 1.6 13.0 211.9 44.2 26.1	C C C C C C C C C C C C C C C C C C C	6:1 6:1 3:1 6:1 6:1 6:1					<u> </u>
vs	18.0 . 8 8. 2 8. 0 151.4 6.9 30.2	C C C C C C C C C C C C C C C C C C C	66:11	NC NC	Annex D: Missilr Systems Interface	18.0 .8 .2 8.0 151.4 6.9 4.0	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	66 3 3 4 4 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6					<u> </u>
Subtotal	219.7				Subtotal	219.7							

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Table C3-8 (Con't.) COURSE MODIFICATION W. SHEET

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4 05 32 S/I RATIO f:1 4:1 9 6:1 3:1 1:2 6:1 3:1 1:1 6:1 6:1 6:1 6:3 ~ TYPE MASTHUC. TION a # # 28.13 2 E E ညညည် υ 7.0 2.0 5.0 3.0 6.0 HOUSES 2.0 . . From: Navy Contae 3-113-6177 Harpoon Weipon System (Surface Application) Naintenance COURSY, ANNUXES, FILES, AND OBJECTIVES USED TO PROJECT ADDED MODULES Ledwon Topic 3.4: System Pinctional Description kesson irpid s.2: System General Description Leawin Topic 3.7: Weapon Countrol Andicator Panel Lecton topic 1.1: Introduction to the Harpoon Weapon System, Canisto: & ufiguration Akuton Topic 3.8: Data Processo: Computer Unit 3: Harpwoo Weapon. System, Canister Configuration Subtotal Subtotal Subrotal Lesfon Tapic 3.6: Introduction to Fault Isolation MODIFIED COURSE INFORMATION. Lenkon Mopic 3.3: Syntem Operation S.// PLATED 6:L 3: 6:1 6:1 6:1 3:1 3:1 3 :: 3:1 3:1 3:1 TYPE INSTRUC YION c PEl C PE1 D PEI PEI EI C PE1 ပ 5.0 4.0 3.0 3.0 2.0 HOURS 5.0 6.0 11.0 2.1.0 General Description of the CSWS Fire Direction Control System Annex E: CSWS Fire Control System COURSE ANNEXES, FILES, AND OBJECTIVES Introduction to the CSWS Weapon System Sub.otal Subtotal Weapon Control Indicator Panel Subtotal Subtotal Data Processor Computer Introduction to Fault (solation System Functional Description System Operation WODIFICA TION/ DELETION CODE ADD 90 ADD ADD ADD ADD ADD S/I RATIO TYPE INSTRUC-TION EXISTING COURSE INFORMATION HOURS REFERENCE, BASELINE 1, 2, 3 COURSE ANNEXES, FILES, AND OBJECTIVES

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Table C3-8 (Contt.) REFERENCE, BASELINE 1, 2, 3

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1	s/i RATIO	3:1	7:9	6:1	6:1	7 1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	6:1			
	TYPE INSTRUC- TION	ប្រធានីវ	υ	U	υ	lad o	ជ			
	HOURS	13.0 10.0 27.0 7.0 57.0	4.0	1.0	1.0	1.0 5.0 6.0	7.0		_	
MODIFIED COURSE INFORMATION	COURSE ANNEXES, FILES, AND GOLCTIVE, USED TO PROJECT AND ANDER AND LES	Lesson Topic 3.9: Data Conversion Lat	Lesson Topic 3.10: Liuncher Switching Unit	Lesson Topic 3.11: Canister Missile Launcher and Launcher Relay Assembly	Lesson Topic 3.13: Casualty Panel	Lesson Topic 3.16: System Fault Isolation Subtotal	Examination Subtotal Harpoon Fire Control System			
noo a	S/I RAT10	7111	3:1	6:1	6:1	6:1 3:1	3:1		_	
MODIFIE	TYPE PUSTRUC TNON	C PE1	C PF3	U	U	, o	ផ			
	HOURS	13.0 10.0 27.0 7.0 57.0	2.0	1.0	0:1	1.0	7.0 120.0 1328.0	16.0 8.0 32.0	1384.0	173.0
	COURSE ANNEXES, FILES, AND OBJECT**VES	Data Conversion Unit	Launcher Switching Unit Subtotal	Missile Launcher und Launcher Relay Ausembly	Remote Piring Panel	System Fault isolation Subtotal	Examination Subtotal CSMS Fire Control System Total Academic Time	Administrative Time: Inprocessing Jutprocessing Payday Activities Total Nonacademic Time	Total Course Time	Training Time in Man-Days
	MODIFICA TION/ DELETION CODE	ADD	ADD	ADD	ADD	ADD	ADD	O Z	_	
	S/I RATIO									
4 TION	TYPE INSTRUC- TION									
INFORM	HOURS						1208.0	16.0 8.0 32.0 56.0	1264.0	156.0
EXISTING COURSE INFORMATION	COURSE ANNEXES, FILES, AND OBJECTIVES						Total Academic Time	Administrative Time: Inprocessing Outprocessing Payday Activities Total Nonccademic Time	Total Course Time	Training Time in Man-Days

Table C3-8 (Con't.) COURSE MODIFICATION WORKSHEET

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// pp S/I RATIO TYPE INSTRUC-TION HOURS COURSE ANNEXES, FILES, AND OBJECTIVES USED TO PROJECT ADDED MODULES MODIFIED COURSE INFORMATION S/I RATIO TYPE INSTRUC TION HOURS COURSE ANNEXES, FILES, AND OBJECTIVES Instructional Breakdown: 288.8 24.4 8.0 8.0 1.2 340.3 340.3 46.8 104.8 17.4 C CAI CAI TV TV TV PE1 PE1 E1 E1 E1 E1 E1 E1 MODIFICA TION/ DELETION CODE S/I RATIO TYPE INSTRUC-TION EXISTING COURSE INFORMATION HOURS REFERENCE, BASELINE 1, 2, 3 256.8 3.0 3.0 8.0 11.2 340.3 428.1 45.8 85.5 1208.0

MLCM4 COURSE ANNEXES, FILES, AND OBJECTIVES Instructional Breakdown:

Table C3-9

COURSE MODIFICATION WORKSHEET

REFERENCE, BASELINE

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50 2401 **₹** < 2 ×× ×× S.1 RATIO TYPE INSTRUC-TION HOURS COURSE ANNEXES, FILES, AND OBJECTIVES USED TO PROJECT ADDED MODULES MODIFIED COURSE INFORMATION S/I RATIO 20:1 6:1 29:1 6:1 20:1 6:1 20:1 6:1 20:1 6:1 6:1 20:1 20:1 20:1 20:1 6:1 6:1 20:1 20:1 6:1 6:1 TYPE INSTRUC TION C PI C PE1 PE3 E1 C PEI PE3 C PE1 E1 C PI PE: HOURS 15.6 46.6 3.8 5.0 71.0 8.9 24.6 4.0 38.0 7.8 26.2 4.0 38.0 6.9 17.1 6.2 1.2 141.1 4.5 14.0 2.2 13.2 99.6 13.0 Annex D: Radio Set AN/GRC-160 Annex E: Radio Set AN/VRC-12 Annex B: Solid State Audio Amplifier Circuitry Annex C: Operating and Testing Solid State Oscillators Annex A: Solid State Power Supply Circuitry COURSE ANNEXES, FILES, AND OBJECTIVES Subtotal Subtotal Subtotal Subtotal Subtotal MODIFICA. TION/ DELETION CODE ž ž 웆 ž ပ္က S/I RATIO 20:1 6:1 20:1 6:1 20:1 6:1 6:1 6:1 20:1 6:1 6:1 20:1 20:1 20:1 20:1 6:1 6:1 6:1 20:1 20:1 6:1 6:1 TYPE INSTRUC TION EXISTING COURSE INFORMATION C PE1 PE3 C PE1 PE3 C PE1 E1 C Pri Pri HOURS 15.6 46.6 13.8 15.0 17.0 24.6 24.6 38.0 7.8 26.2 4.0 38.0 93.0 2.2 13.2 99.6 13.0 6.9 17.1 6.2 141.1 4.5 Annex C: Uperating and Testing Solid State Audio Oscillators Annex D: Radio Set AN/GRC-160 Radio Set AN/VRC-12 COURSE ANNEXES, FILES, AND OBJECTIVES Annex B: Solid State Audio Amplifier Circuitzy Subtotal Subtotal Annex A: Solid State Power Supply Circuitry Subtotal Subtotal Subtotal Annex E:

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COURSE MODIFICATION WORKSHEET Table C3-9 (Con't.)

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EXISTING COURSE INFORMATION	INFORM	ATION				-	MODIFIE	D COUR	MODIFIED COURSE INFORMATION				
COURSE ANNEXES, FI. ES, AND OBJECTIVES	HOURS	TYPE INSTRUC TION	S/I RATIO	MUDIFICA TION/ DELETION CODE	COURSE ANNEXES, FILES, AND OBJECTIVES	HOURS	TYPE INSTRUC- TION	S/I RATIO	COURSE ANNEXES, FILES, AND OBJECTIVES USED TO PROJECT ADDED MODULES	HOURS	TYPE INSTRUC- TION	S/I RATIO	# 99
Annex F: Radio Teletypewilter Set AN/GRC-142	1.5 5.0 55.5	C P I	20:1 20:1 6:1	NC S	Annex F; Radio Teletypewriter Set An/GRC-142	1.5 5.0 5.5	C P1	20:3					K X
Subtotal	6.0	E3	6:1		Subtotal	6.0	ដេ	6:1					ď ×
Annex G: Radio Set AN/GRC-106 and Radio Teletypewilter Modem HD-522/GRC Subtotal	10.4 3.0 243.3 46.0	TV TV PEI	20:1 20:1 20:1 6:1 6:1 6:1	ξ 2.3.1	Annex G: Radio Set AN/GRC-lo6 and Radio Teletypewriter Modem MD-522/GRC Subtotal	10.4 3.0 243.3 46.0	C TV PI PEI PEI EI	20:1 20:1 20:1 6:1 20:1 6:1					N/N
Annex H: Maintenance Shop Training Exercise	42.0	PEI	6:1	2 F	Annex H: Maintenance Shop Training Exercise	42.0	PEl	6:1				- "-	
Annex I: Chemical Agent Automatic Alarm	28.4. 28.5. 28.5. 20.5.	C TV TV PE1	20;1 20:1 20:1 6:1 20:1 6:1	<u>ç</u>	Annex I: Chemical Agent Automatic Alarm	3.5 1.0 28.5 4.0	C D TV TV PE1	20:1 20:1 20:1 6:1 20:1 6:1					
Subtotal	38.0				Subtotal	38.0							23023
				-									

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Table C3-9 (Con't.)
course modification worksheet
REFERENCE, BASELINE

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COURSE INFORMATION				_	MODIFIED	D COUR	COURSE INFORMATION				
I TYPE S/I TION/ COURS TION RATIO DELITION COURS	Š Š	COURS	COURSE ANNEXES, FILES, AND OBJECTIVES	HOURS	TYPE INSTRUC- TION	S/J RATIO	COURSE ANNEXES, FILES, AND OBJECTIVES USED TO PROJECT ADDED MODULES	HOURS	TYPE INSTRUC: TION	S/I RATIO	# 90
							From: Navy Course C-102-3015 AN/ASW-25 A/B Digital Data Communications System				
Annex 3:	Annex	Annex	3; PLRS	<u> </u>							
ADD Introduction 129 Position 1		Introdu 129 Pos Ing Sys AN/VSQ- Unit (4	Introduction to the AN/TSQ 129 Position Location Report- ing System (PLRS) and the AN/VSQ-1 Surface Vehicular Unit (SVU)	2.0	U 4	20:1	Unit 1: Introduction to the ASW-25 A/B Data Link System	4.0	υ	4:1	2404
			Subtotal	0.							
ADD Front-F		Front-F Out (UB	Front-Panel and User Read- Out (URO) Unit	2.0	o I d	20:1	Unit 2; Topic 1: AN/ASW-25A/B Control Units (C7100 and C7100A/ASW)	0:	U	4:1	
			Subtotal	0.+							
ADD Troubleshoot 1 User Read-Out 1 Read-Out 1 RP Assembly:		Troubles User Rea RF Assem	Troubleshoot Front Panel and User Read-Out (URO) Unit	0.1	rèi	1:0	Unit 3, Topic 5: Operational Checkout of the C7100 and C7100 A From: 102-3510 Avionic Communications Equipment Repair Course weight Avionic Communications Equipment	1:0	138	2:1	
ADD Perform Assembly		Perform Assemb]	Perform Basic Tests on RF Assembly Subtotal	2.2	PI	20:1	GOI: Perform Basic Tests on Radio Set AN/ARC-114 Subtotal	4.3	PI PE1	20:1 6:1	
ADD ISOlate Assembly		1solate Assembl	lsolate Malfunctions in RF Assembly Subtotal	4.3	PI TV PE1	20:1 20:1 6:1	GO2: Isolate Malfunctions in Radio Set AN/ARC-114 Subtotal	4.3	PI TV PE1	20:1 20:1 6:1	

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Table C3-9 (Con't.) course modification worksheer

REFERENCE, BASELINE

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EXISTING COURSE INFORMATION	INFORM	ATION					MODIFIE	inoo a	MODIFIED COURSE INFORMATION				
COURSE ANNEXES, FILES, AND OBJECTIVES	HOURS	TYPE INSTRUC- TION	1.58 C11A	MODIFICA TION/ DELETION CODE	COURSE ANNEXES, FILES, AND OBJECTIVES	ноииз	TYPC INSTRUC: TION	S/I RATIO	COURSE ANNEXES, FILES, AND OBJECTIVES USED TO PROJECT ADDED MODULES	HOURS	TYPE INSTRUC- TION	S/I RATIO	// DD
		AND THE REAL PROPERTY OF THE P		ADU	Adjust and Align RF Assembly Subtutal	6.4 7.0	P1 PE1	20:1 6:1	GOJ: Adjust Radio Set AN/ ARC-114 Subtotal	6.4	1d 1d	20:1	
		<u> </u>		ggy	Examination Subtotal	3.0	i d	6:1 20:1	GO4: Examination Subtotal	2.9	14	6:1 20:1	
	···	····		ADD	Introduction to the PLRS Portable Test Unit	2.0	υ	20:1	From: Navy Course C-102-3015 Unit 3, Topic 1: Introduction to the SM-511 Test Set	2.0	υ	4: 1:	
													
													•
				QQV	Troubleshoot AN/TSQ-129	7.0	PEI	6:1	Topic 6: AN/ASW-25A/B Troubleshooting	9.0	PEI	2:1	
	·			ADD	Examination	3.0	e a	20:1	Unit 4: Review and Examination	3.0	E3	2:1	
			<u></u>		PLRS Total	63.0							

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Table C3-9 (Con't.)

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COURSE MODIFICATION WORKSHEET

REFERENCE, BASELINE

55 ₹, S/I RATIO TYPE INSTRUC-TION HOURS COUFSE ANNEXES, FILES, AND OBJECTIVES USED TO PROJECT AUDED MODULES MODIFIED COURSE INFORMATION SAI TYPE INSTRUC-TION 981.00 5.0 8.0 75.0 HOURS 100.0 135.1 135.0 1081.0 1. Actual student/instructor ratios were not available for either 101-31520 or 102-35L10. Ratios used were taken from either DA PAN \$70-558 or TRADOC Cir 351-12. COURSE ANNEXES, FILES, AND OBJECTIVES Inprocessing Outprocessing Physical Conditioning Commandant's Time Training Time In Man-Days Instructional Breakdown Total Nonacademic Time Adjusted to 101-31E20 POI Man-Days Administrative Time: Total Academic Time 62.8 46.5 10.6 2.2 746.9 9.6 9.6 9.6 Total Course Time MODIFICA. TION/ DELETION CODE ¥ S/I RATIO TYPE INSTRUC: TION EXISTING COURSE INFORMATION HOUR\$ 918.0 5.0 8.0 75.0 100.0 1018.0 127.3 125.0 COURSE ANNEXES, FILES, AND OBJECTIVES Inprocessing Outprocessing Physical Conditioning Commandant's Time Training Time In Man-Days Instructional Breakdown 101-31E20 POI Man-Days rotal Nonacademic Time dministrative Time: Total Academic Time Potal Course Time 56.8 35.3 10.2 2.2 707.4 9.6 Note:

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COURSE MODIFICATION WORKSHEET Table C3-10

REFERENCE, BASELINE 1, 2, 3

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	S/I RATIO									
	TYPE INSTRUC- TION					· _	<u> </u>			
	HOURS									
MODIFIED COURSE INFORMATION	COURSE ANNEXES, FILES, AND OBJECTIVES USED TO PROJECT ADDED MODULES									
D COUR	\$41 RATIO	20:1	•	20:1		20:1	:	20:1	20:1	
MODIFIE	TYPE INSTRUC- TION	C SES		C PE1	<u> </u>	C PEI		Property Pro	0 I Z Z	
	HOURE	15.6 46.6 3.8	21.0	24.6	38.0	7.8	38.0		191.0 13.2 99.6	0 0 0
	COURSE ANNEXES, FILES, AND OBJECTIVES	Annex At Solid State Power Supply Circuitr/	Subtotal	Annex B: Solid State Audio Amplifier Circuitry	Subtotal	Annex C: Operating and Testing Solid State Oncill- ators	Subtotal	Annex D: Radio Set AN/GRC-160	Subtotel Annex E: Radio Set AH/VRC-12	Subtotal
	MOBIFICA- TION/ DELETION CODE	32 22		Š		ž		ŭ	ž	
	8.1 8.4310	20:3	<u>.</u>	20:1 6:1 20:1	<u>.</u>	20:3	;	2001 2011 2011 2011 2011 2011	20:1 20:1 6:1	
ATION	TVPII INSTRUC. Tron	C PE1	มี 	PES C	<u></u>	5 II I	i 		o 2 2 2	<u></u>
INFORM	нолия	2.5 46.6 9.8	21.0	8.45 8.60	0. °.	26.2	36.0	14.52	191.0 2.2 13.2 99.6	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
EXISTING COURSE INFORMATION	COURSE ANNEXES, FILES, AND OBJECTIVES	Annex A: Solid State Power Supply Circultry	Subtotal	Annex B: Solid State Audio Amplifier Circultry	Subtotal	Annex C: Operating and Teating Solid State Audio Oscillators	Subtotal	Annex D: Radio Set AN/GRC-160	Subtotal Annex E: Radio Set AN/VHC-12	Subtotal

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Table C3-10 (Con't.)

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COURSE MODIFICATION WORKSHEET REFERENCE, BASELINE 11. 21. 3.

EXISTING COURSE INFORMATION	INFORM	ATION		·			MODIFIED	D COURSE	RSE INFORMATION				
COURSE ANNEXES, FILES, AND OBJECTIVES	HOURS	TYPE	RATIO	MODIFICA- TION/ DALETION CODE	COURSE ANNEXES, PILES, AND OBJECTIVES	**OOR	TYPE INSTRUC- TION	#/I RATIO	COURSE ANNEXES, FILES, AND OBJECTIVES USED TO PROJECT ADDED MODULES	HOUNE	TYPE INSTAUC- TION	\$VI RATIO	# BB
Annex P. Radio Teletypewriter Set AN/GRC-142	L	7 L	2011	X	Annex Pi Radio Teletypowilter Set An/GRC-142	1.5	C P1	2011					× ×
Subtotal	* 0 0	Z =			Subtotal	69.0		7 T					Š
Annex G. Radio Set AN/GRC-106 ani Radio Teletypewfiler Roism MD-522/GRC	\$ 100 C C C C C C C C C C C C C C C C C C	. 2222	2002	ž	Annew G: Radio Set AN/GNC-100 and Radio Teletypowriter Modem MD-522/GRC	24.1.0 24.1.0 26.3	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	20.1 20.1 20.1 20.1 6.1		····			
Subtotal	304.0				Subtotal	304.00							ž
Ansa Hi Maintenance Shop Training Exercise	5.0	*	;	ž	Annex Hr Maintenance Shop Training Exercise	42.0	384	Ę-1					
Ancomatic Alacm	2.05.00	2655	2002		Antomatic Alatm	*************	0 0 7 2 2 3 5 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	7,000					
Bubtotal	0.00	:			Subtract a L	0							23023

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# 5											
8			2404			*****					
S/I RATIO					4:1		2:1		20:1	20:1 20:1 6:1	
TYPE INSTRUC- TION			U		υ	 -	194		PI	PI TV PE1	
HOURS			0.4		4.0		1.0		4.8	4.3	
COURSE ANNEXES, FILES, AND OBJECTIVES USED TO PROJECT ADDED MODULES	From: Navy Course C-102-3015 AN/ASW-25 A/B Digital Data Communications System		Unit 1: introduction to the ASM-25 A/B Data Link System		Unit 2, Topic 1: AN/ASW-25A/B Control Units (C7100 and C71006/ASW)		Unit 3, Topic 5: Operational Checkout of the C7100 and C7100 A Prom: 102-34110 Avioric Communications	Equipment Repair Course Annex G: Standard Light- weight Avionic Communications	GO1: Perform Basic Tests on Radio Set AN/ARC-114 Subtotal	GO2: Isolate Malfunctions in Radio Set AN/ARC-114 Subtotal	
S/I RATIO			20:1		20:1		6:1		20:1	20:1 20:1 6:1	
TYPE INSTRUC- TION			5 II		D Id		134		P1 PE1	PI TV PE1	
HOURS			2.0	4.0	2.0	4.0	1.0		4.8	4.3	
COURSE ANNEXES, FILES, AND OBJECTIVES		Annex 3: PLRS	Introduction to the AN/TSQ-129 Position Location Reporting System (PLRS) and the AN/VSQ-1 Surface Vehicular Unit (SVU)	Subtotal	Front-Panel and User Read- Out (URO) Unit	Subtetal	Troubleshoot Front Panel and User Read-Out (UMO) Unit		o Te	Isolate Malfunctions in RF Assembly Subtotal	
WODIFICA. TION/ DELETION			ADD		ADD		ADD		ADD	ADD	
S/I RATIO		·····									
TYPE INSTRUC. FION											**************************************
ноияѕ											
COURSE ANNEXES, FILES, AND OBJECTIVES		-									
	TYPE S/I TION/ COURSE ANNEXES, FILES, AND HOURS INSTRUC. RATIO RATIO PROJECT HOURS TION CODE TION RATIO CODE TION ADDED MODULES HOURS INSTRUC. S./I TION/ TOOK COURSE ANNEXES, FILES, AND HOURS INSTRUC. RATIO DELETION CODE TOOK ADDED MODULES FLOW ADDED MODULES TION FATIO DELETION CODE TOOK ADDED MODULES TION FATION FATIO DELETION COURSE CAND TYPE SAL ADDED MODULES TION FATION TOOK COURSE CALOZ-3015 FLOM: Navy COURSE CALOZ-3015 RATIO OBJECTIVES AND HOURS INSTRUC. TOOK ADDED MODULES THON ADDED MODULES TOOK ADDED MODULES	HOUNS INSTRUC. TION TOOL RATIO TION ADDED MODILES TOOL RAYAN-25 A/B Digital Data Communications System	HOUMS INSTRUC. ATION ADDICTION ADD ADDE ANNEXES, FILES, AND ADD ADDE ANNEXES, FILES, AND ADD ADDE ANNEXES, FILES, AND ADD ADDE MODULES TION ADDED MODULES TION ADDED MODULES TION ADDED MODULES TION ADDED MODULES TION COMMUNICATIONS System COMMUNICATION to the AN/TSQ- 2.0 C 20:1 Unit 1: introduction to the AN/TSQ- 3.0 TOTAL ASW-25 A/B Data Link System ANNEXPL System (PLRS) and the AN/TSQ- ANNEXPL System (PLRS) and the ANYTSQ- AND ADD ADD ADD ADD ADD ADD ADD ADD ADD	HOUMS INSTRUC. TION OBLECTIVES Annex J: PLRS ADD Introduction to the AN/TSQ- Ing System ANAWASQ-1 Surface Vehic Lar Unit (SVU) Subtotal TOW MODIFICA- HOUMS TION ADD OBLECTIVES Sin OBJECTIVES USED TO PROJECT ADDED MODULES TION ADDED TO PROJECT HOUMS TION ADDED TO PROJECT HOUMS TION ADDED TO PROJECT TION ADDED MODULES TION ADDED TO PROJECT TION ADDED TO PROJECT TION ADDED MODULES TION ADDED TO PROJECT TION ADDED TO PROJECT TION ADDED MODULES TION ADDED TO PROJECT TION ADDED TO PROJECT TION ADDED TO PROJECT TION ADDED TO PROJECT TION ADDED MODULES TION ADDED TO PROJECT TION TO COURSE CL-102-3015 TO COMMUNICATION TO PROJECT TION ADDED MODULES TO COURSE CL-102-3015 TO COURSE OF INCIDENCE TO CO	HOUNS TYPE S.I TOW. ADD INTEGRACE AND System (PLRS) and the ANVISQ- Subtotal ADD System (PLRS) and the ANVISQ- Subtotal ADD Subtotal ADD OUT (SWD) ADD Front-Panel and User Read- 2.0 C C 20:1 Unit 2, Topic 1: ANVASW-25A/B Units (C7100 and Out (UND) Unit (SWD) Uni	HOUNS INSTRUC. ADD Introduction to the AN/TSQ-1 Subtotal ADD Front-Panel and User Read- Out (URO) Unit Subtotal Tion COURSE ANNEXES, FILES, AND FILES	HOUNS 1779E SII TOOM, HOUNS HES, AND HOUNS HOUNS	TTOPE NOTIFICAL TOOL TOOL TOOL TOOL TOOL TOOL TOOL TO	HOUNS INCHES SAIN MODIFICATION COLURS ANNUEXES, FILES, AND FOLGE TOPE AND FOLGE AND FO	Note 1774	

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Table C3-10 (Con't.) COURSE MODIFICATION WORKSHEET REFERENCE, BASELINE 1, 2, 3

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99 S/I RATIO 20:1 20:1 6:1 6:1 3:1 1:1 2:1 6:1 20:1 2:1 TYPE INSTRUC TION C D PE1 E1 PE1 PI PE1 3 E1 P1 2.9 6.4 2.0 13.0 10.0 7.0 57.0 3.0 HOURS From: Navy Course C-102-3015 Topic 6: AN/ASW-25A/B Troubleshooting From: Navy Course C-102-3015 Unit 3, Topic 1: Introduction to the SM-511 Test Set From: Navy Course J-113-0127 Harpoon Weapon System (Surface Application) Maintenance COURSE ANNEXES, FILES, AND OBJECTIVES USED TO PROJECT ADDED MODULES GO3: Adjust Radio Set AN/ Subtotal Subtotal Subtotal Lesson Topic 3.9: Data Conversion Unit MODIFIED COURSE INFORMATION Unit 4: Review and Examination Examination S/I RATIO 20:1 20:1 6:1 6:1 6:1 20:1 20:1 6:1 20:1 6:1 20:1 TYPE INSTRUC TION pt PEl C PI PE1 E1 PEl E3 E1 PI Ö 6.4 13.0 10.0 27.0 7.0 57.0 2.9 3.0 120.0 HOURS Troubleshoot Signal Message Processor COURSE ANNEXES, FILES, AND OBJECTIVES Introduction to the PLRS Portable Test Unit Subtotal Subtotal Subtotal Troubleshoot AN/TSQ-129 Adjust and Align RF Assembly Examination PLRS Total MODIFICA TION/ DELETION CODE ADD ADD ADD ADD ADD ADD S/I RATIO TYPE INSTRUC TION EXISTING COURSE INFORMATION HOURS COURSE ANNEXES, FILES, AND OBJECTIVES

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Table C3-10 (Con't.)

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COURSE MODIFICATION WORKSHEET

REFERENCE, BASELINE 1, 2, 3

EXISTING COURSE INFORMATION	INFORM.	ATION				-	MODIFIED	COUR	COURSE INFORMATION				
COURSE ANNEXES, FILES, AND OBJECTIVES	HOURS	TYPE INSTRUC. THON	S/I	MODIFICA TION/ DELETION CODE	COURSE ANNEXES, FILES, AND OBJECTIVES	HOURS	TYPE INSTRUC TION	S/I RATIO	COURSE ANNEXES, FILES, AND OBJECTIVES USED TO PROJECT ADDED MODULES	HOURS	TYPE INSTRUC- TION	S/I RATIO	# 99
Total Academic Time	918.0				Total Academic Time	1038.0							N/A
Administrative Time:				NC NC	Administrative Time:								
Inprocessing Outprocessing Physical Conditioning Commandant's Time	5.0 8.0 75.0 12.0			· · · · · · · · · · · · · · · · · · ·	Inprocessing Outprocessing Physical Conditioning Commandant's Time	5.0 8.0 75.0		·					
Total Nonacademic Time	100.0				Total Nonacademic Time	100.0							
Total Course Time	1018.0			•	Total Course Time	1138.0							
Training Time In Man-Days	127.3				Training Time In Man-Days	142.3							
101-31£20 PO1 Man-Days	125.0				Adjusted to 101-31E20 POI Man-Days	140.0							
Instructional Breakdown					Instructional Breakdown								
C 56.8 D .5 PI 35.3 TV 10.2 F 2.2 PE1 707.4 PE3 9.6 Total 918.0					C 75.8 D .5 P1 56.5 TV 10.6 F 2.2 PE1 771.9 PE3 9.6 E1 105.9 E3 3.0								
Note: 1. Actual student/instructor ratios were not Ratios used were taken from either DA PAN	from eith	were not		e for eit	available for either 101-31E20 or 102-35L10. 570-558 or TRADOC Cir 351-12.								
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Table C3-11

COURSE MODIFICATION WORKSHEET

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Avionic Mechanic Course
File A(9: SLAE Communications Equipment Subtotal MODIFIED COURSE INFORMATION S/I RATIO 20:1 20:1 6:1 6:1 6:1 6:1 6:1 6:1 6:1 6:1 6:1 6:1 20:1 6:1 6:1 20:1 TYPE INSTRUC TION PE3 PE1 PE3 PE1 PE3 PE1 E1 PE1 PE1 E1 PE1 El PE1 E1 HOURS 3.0 29.2 2.3 31.5 43.9 20.4 4.6 25.0 8.0 2.0 10.0 5.0 23.1 47.5 12.9 5.6 66.0 Course Introduction Annex H: Troubleshoot Medium Powered FM Radios COURSE ANNEXES, FILES, AND OBJECTIVES Common Subjects Subtotal Subtotal Subtotal Subtotal Receiver Main-Subtotal Subtotal Subtotal Subtotal Radio Set AC Circuits Annex G: Transmitter Maintenance DC Circuits Soldering Subannex H: AN/ARC-114 Annex E: tenance Annex A: Annex B: ü ä Annex F: Annex MODIFICA-TION/ DELETION ADO ž ž ¥ ž ž ž ž Š S/I RATIO 20:1 20:1 6:1 6:1 6:1 6:1 6:1 6:1 6:1 6:1 20:1 6:1 6:1 6:1 TYPE INSTRUC-TION EXISTING COURSE INFORMATION PE 1 E 1 PE3 PEA El PE1 E1 PE1 PE) PE1 PE3 E1 HOURS 3.6 29.2 43.9 2.6 46.5 47.5 12.9 5.6 66.0 20.4 8.0 2.0 10.0 28.0 23.1 Annex H: Troubleshoot Medium-Powered FM Radios Receiver Maintenance Course Introduction COURSE ANNEXES, FILES, AND OBJECTIVES Transmitter Main-Subtotals Subtotal Common Subjects Subtotal Subtotal Subtotal Subtotal Subtotal DC Carcuits AC Circuits Soldering Annex G: tenance Annex A: Annex B: Annex C: ä ä ä Annex Annex

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Table C3-11 (Con't.)

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COURSE MODIFICATION WORKSHEET

REFERENCE, BASELINE

		HOURS INSTRUC S/I GG #	A/N	2402		2403	\$							
DESC. INFORMATION	COURSE INFORMATION	COURSE ANNEXES, FILES, AND OBJECTIVES USED TO PROJECT ADDED MODULES										~		
	1	SII	6:1		6:1 20:1 6:1		6:1 20:1 6:1	6:1 20:1 6:1						
	MODIFIED	TYPE INSTRUC- TION	PE1 PE3	<u> </u>	PE1 PE3 E1		PE1 PE3 E1	PE1 PE3 E1						
		HOURS	24.8 5.2	33.5	23.0 7.5 6.0	36.5	32.8	33.8 6.7 4.0	375.0		8.0 6.0 20.0 12.0	46.0	52.6	
		COURSE ANNEXES, FILES, AND OBJECTIVES	Annex 1: Troubleshoot Low - Powered FM Radio	Subtotal	Annex J: Troubleshoot Secured FM Radio Electronic Warfate	Subtotal	Annex K: Troubleshoot Inter- communications System Application and Installation of An/VIC-1 Subtotal	Annex L: Troubleshoot Single Sideband Radio Teletype- writer Sets Subtotal	Total Academic Time	Administrative Time:	Inprocessing Outprocessing Physical Conditioning Commandant's Time	Total Nonacademic Time Total Course Time	Training Time in Man-Deys	
		MODIFICA TION/ DELETION CODE	N.		NC NC		NC	NC NC						
		S/I RATIO	6:1 20:1	6:1	6:1 20:1 6:1		6:1 20:1 6:1	6:1 20:1 6:1						
	ATION	TYPE INSTRUC- TION	PE1	ជ	PE1 PE3		PE1 PE3 E1	PE1 PE3 E1						
	INFORMATION	ноияѕ	24.8	33.5	23.5	36.5	32.8	33.8 6.7 4.0 44.5	370.0		8.0 6.0 20.0	46.0	52.0	
	COURSE	COURSE ANNEXES, FILES, AND OBJECTIVES	Annex 1: Troubleshoot Low- Powered FM Radio	Subtotal	Annex J: Troubleshoot Secured FM Radio Electronic Warfare	Subtotal	Annex K: Troubleshoot Inter- communications System Application and Installation of AN/VIC 1 Subtotal	Annex L: Troubleshoot Single Sideband Radio Teletype- wilter Sets Subtotal	Total Academic Time	Administrative Time:	Irprocessing Outprocessing Physical Conditioning Commandant's Time	Total Nonacademic Time Fotal Course Time	Training Time in Man-Days	

Table C3-11 (Con't.)

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COURSE 101-31V10

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COURSE MODIFICATION WORKSHEET

REFERENCE, BASELINE

99 :VI IIATIO TYPE INSTRUC-TION HOURS COURSE ANNEXES, FILES, AND OBJECTIVES USED TO PROJECT ADDED MODULES MODIFIED COURSE INFORMATION S/I RATIO TYPE INSTRUC-TION HOURS Note: 1. Actual student/instructor ratios were not available for either 101-31V10 or 102-35K10. Ratios used were taken from either DA PAM 570-558 or TRADOC Cir 351-12. COURSE ANNEXES, FILES, AND OBJECTIVES Instructional Breakdown 290.9 44.6 39.0 375.0 PE1 PE3 E1 E2 Total MODIFICA TION/ DELETION CODE S/I RATIO TYPE INSTRUC TION EXISTING COURSE INFORMATION HOURS COURSE ANNEXES, FILES, AND OBJECTIVES Instructional Breakdown 286.5 44.0 39.0 370.0 PE1 PE3 E1 E2 Total

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Table C3-12

COURSE MODIFICATION WORKSHEET

REFERENCE, BASELINE 1, 3, 3

COURSE 198 - 35E10 MOS 35E10

99 N/A N/A N/A ۲ ۲ S/I RATIO TYPE INSTRUC TION HOURS COURSE ANNEXES, FILES, AND OBJECTIVES USED TO PROJECT ADDED MODULES MODIFIED COURSE INFORMATION S/I RATIO 20:1 20:1 20:1 20:1 6:1 6:1 20:1 20:1 20:1 20:1 20:1 6:1 6:1 6:1 20:1 20:1 20:1 20:1 6:1 20:1 20:1 20:1 6:1 6:1 TYPE INSTRUC TION C PI PI TV TV PE1 PE2 PE3 PE3 SET A LE c PEI EI 27.2 5.5 5.5 20.0 20.0 20.0 20.0 11.1 10.7 10 ноияѕ COURSE ANNEXES, FILES, AND OBJECTIVES Annex B: Fundamentals of Alternating Current Mine Detectors Subtotal Subtotal Annex A: Fundamental Subjects and Basic Electricity Annex C: Solid State Technology Subtotal Annex D: MODIFICA TION/ DELETION CODE ဗ္ဗ Š S/I RA110 20:1 20:1 20:1 70:1 6:1 6:1 20:1 20:1 20:1 20:1 20:1 6:1 6:1 6:1 20:1 20:1 20:1 50:1 6:1 20:1 20:1 20:1 6:1 6:1 TYPE INSTRUC TION INFORMATION C P1 C ₹ ₹ ₹ ₹ ₹ ₹ ₹ ₹ 2 4 E E 18.4 100.7 2.0 11.2 25.0 11.0 4.0 8.0 25.5 3.0 2.0 36.0 67.0 11.1 HOURS Annex A: Fundamental Subjects and Basic Electricity EXISTING COURSE COURSE ANNEXES, FILES, AND OBJECTIVES Annex B: Fundamentals of Alternating Current Subtotal Mine Detectors Subtotal Annex C: Solid State Technology Annex D:

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Table C3-12 (Con't.)

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COURSE MODIFICATION WORKSHEET

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COURSE INFORMATION	5	z				•	MODIFIE	р соия	MODIFIED COURSE INFORMATION				
TYPE HOURS INSTRUC TION	TYPE	on a	S/I RATIO	MODIFICA TION/ DELETION CODE	COURSE ANNEXES, FILES, AND OBJECTIVES	HOURS	TYPE INSTRUC TION	S/I RATIO	COURSE ANNEXES, FILES, AND OBJECTIVES USED TO PROJECT ADDED MODULES	HOURS	TYPE INSTRUC TION	S/I RATIO	# 95
12.5 C 5.5 D 1.5 TV 19.5 PE1 3.0 PE3	C C C C C C C C C C C C C C C C C C C		20:1 20:1 20:1 6:1 6:1 6:1	ис	Annex E. Night Viston Equipment	4.2.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4	C D TV PEI	20:1 20:1 20:1 6:1 6:1 6:1					N/A
	2 6 8 22		20:1	NG	Subtotal Annex F: Battlefivld Illumination	46.0 13.0 7.0 26.0	C D PE1	20:1 20:1 6:1 6:1					∀ ∕ v
	25 25		20:1 20:1 6:1	O V	Subtotal Annex G: Advanced Electronic Instrumentation	56.0 3.0 8.0 5.0	C 0 PE1 E2	20:1 20:1 6:1 6:1		·			N/A
20.0 30.0 56.0 55.0 82.0 82.0	2 2 2 2		20:1 20:1 6:1 6:1	S S	Subtotal Annex H: Distance Measuring Equipment	20.0 30.0 56.0 5.0	C D PE1 E2	20:1 20:1 6:1 6:1					N/A
8.5 C 4.0 P 7.0 P 3.0 E 40.0	2 6 1 2 2		20:1 20:1 20:1 6:1	ς Σ	Annex I: Azimuth Orientation Equipment	24.0 24.0 3.0 40.0	C D PI PE1	20:1 20:1 20:1 6:1 6:1					N/A
										-			

Table C3-12 (Con't.) course modification worksheet REFERENCE, BASELINE 1, 2, 3

EXISTING COURSE INFORMATION	INFORM.	ATION					MODIFIE	ם כסחו	MODIFIED COURSE INFORMATION				
COURSE ANNEXES, FILES, AND OBJECTIVES	HOUNS	TYPE INSTRUC TION	S/I HATIO	MUDIFICA TION/ DELLTION	COURSE ANNEXES, FILES, AND OBJECTIVES	HOURS	TYPE INSTRUC TION	S/I RATIO	COURCE ANNEXES, FILES, AND OBJECTIVES USED TO PROJECT ADDED MODULES	HOURS	TYPE INSTRUC TION	S.n RATIO	# 99
Аппех J: PADS	31.5	C PE1	20:1 6:1	NC	Annex J: PADS	31.5 16.5	ر د 931	2 :1 6:1	From: 102-35M10 Avionic Navigation and Flight				25
Subto: a1	5.0	E2	6:1		Subtotal	5.0	62	6:1	Control Equipment Repair Annex J: Stability Augmentation Systems (SAS)				
				ADD	Annex K: AHRS								2502
					Localize Troubles in CV 2858/ASN 107 Con etter	y 4. W 4.	c D PEI TV	20:1 20:1 6:1 20:1	File J10: Localize Troubles in AH-1G SAS Amplifier	0. 4. C. 4	c 0 PE1 TV	12:1 12:1 6:1 12:1	
					Subtotal	4.0			Subtotal	4.0			
					Isolate Troubles in CV 285°/ASN 107 Convertor	3.1	ر ا ا	20:1	File Jll: Isolate Troubles in AH-1G SAS Amplifier	3.1	ပ ရ မ	12:1 12:1 6:1	
-					Subtotal	22.0			Subtotal	22.0			
		· ·							Annex K. Gyromagnetic Compass Systems				*****
					Troubleshoot CN 1366/ASN 107 Displacement Gyro	5.4	C D PE1	20:1 20:1 6:1	File Kol: Troubleshoot Directional Gyro CN-998/ ASN	5.4	ပ ရ	12:1 1.51 i.i	
					Subtotal	30.0			Subtotal	30.0			
					Examination	4.0	E2	6:1	File Ko2: Examination	4.0	ī	6:1	
					Subtotal AHRS	63.0	•						
End of Course Examination	13.0	E2	 7:5		End of Course Examination	0 = 1	E2	6:1				-	
Total Academic Time	577.0				Total Academic Time	637.0							
												_	

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Table C3-12 (Con't.) course modification worksheet reference, baseline 1, 3, 3

COURSE 198

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	SJI RATIO		
	TYPE INSTRUC TION		
	ноияѕ		
RSE INFORMATION	COURSE ANNEXES, FILES, AND OBJECTIVES USED TO PROJECT ADDED MODULES		
ib course	S/I RATIO		
MODIFIED	TYPE INSTRUC TION		
	HOURS	24.0 6.75.0 6.13.0 781.0 781.0	
	COU!!SE ANNEXES, FILES, AND OBJECTIVES	Administrative Time Inprocessing Outprocessing Outprocessing Physical Training Commandant's Time Open Time Total Non-scudemic Time Training Time in Man-Days Instructional Breakdown C 196.1 D 28.6 PEI 286.5 PEI 23.0 PI 23.0	
	MODIFICA TION/ DELETION CODE	NC e for elt	
-	S/I RATIO	availab:	
ATION	TYPE INSTRUC TION	were no	
INFORMATION	HOURS	24.0 8.0 54.0 13.0 13.0 14.0 722.0 90.0	
EXISTING COURSE (COURSE ANNEXES, FILES, AND OBJECTIVES	Administrative Time Inprocessing Outprocessing Outprocessing Outprocessing Commandant's Time Total Nonacademic Time Total Nonacademic Time Total Course Time Total Course Time Total Lime in Man-Days C Total Lime in Man-Days FEI 25.6 FEI 27.0 FEI 2	

COURSE 611-6 3810

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Table C3-13

REFERENCE, BASELINE

EXISTING COURSE INFORMATION	INFORM	ATION					MODIFIE	noo a	MODIFIED COURSE INFORMATION				
COURSE ANNEXES, FILES, AND OBJECTIVES	HOURS	TYPE INSTRUC TION	\$11 HATIO	MODIFICA TIGN/ DELETION CODE	COURSE ANNEXES, FILES, AND OBJECTIVES	HOUHS	TYPE INSTRUC TION	S/I RATIO	COURSE ANNEXES, FILES, AND OBJECTIVES USED TO PROJECT ADDED MODULES	HOURS	TYPE INSTRUC TION	S/I RATIO	# 99
Annex A: Course/Soldier's Manual Orichtation Subtotal	0: 0:7	, £	52:1	ž.	Annex A: Course/Soldrer's Hanual Orrentation Subrotal	0.7	o Æ	52: 1 20: 1					N/A
Annex B: Busic Vaintenance Skills and Knowledge	2.4.0 B.V.V.	2 0 74 74 E 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1	22:1 20:1 52:1 52:1 52:1 52:1	ž	Annex 8: Basic Maintenance Skills and Knowledge	8 4 4 6 8 L E E E E E E E E E E E E E E E E E E	C D TV PE1 PE3 E3	52:1 20:1 52:1 6:1 52:1 52:1					ž
Subtotal Annex C: Mb0Al Tank Yaintenance Subtotal	3 4 4 6 3 4 6 0 0	77 PE1	52:1 6:1 4:1	ΣΩ	Annex C: M60Al Tank Maintenance Subtotal	42.5 .	77 13 13	52:1 6:1 4:1					∜ _R
Annex D: M110 Self-Propelled Actillery Maintenance Subtotal	10.00	134	6:1	O X	Annex D: Mllû Self-Propelled Artillery Maintenance Subtotal	9.0	PE1	6:1					ž
Annex E: Mll3Al Armored Personnel Carrier (APC) Maintenance Subtotal	27.6 27.6 3.0 45.0	7V PE1	52:1 6:1 4:1	δř	Annex E: Mll JAI Atmored Personnel Carrier (APC) Maintenance Subtotal	14.0 27.6 3.0 45.0	17 PE1 PE1	52:1 6:1 4:1 4:1					<u>«</u> ×
Annex F: Troubleshouting Fuel and Electrical Systems	13.0	381		ÿ Ž	Annex F: Troubleshooting Fuel and Electrical Systems	13.0	PE1 E1	6:1					<u> </u>
	·				Annex G: CSMS Maintenance				From: Navy Course A-113-0044 Gun Mount 5"/54 MK42 NOD 9 + 10				
				dav	Launch System Component Attangement and Function	3.3	ນ ຂີ	52:1	Lesson Topic 16.1: Gun System Cumponent Arrangement and Punction	3.3	J.	6:1	<u> </u>
									(e totalis	0 3		;	

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Table C3-13 (Con't.) course modification worksheet

T REFERENCE, BASELINE 1

COURSE 611-6 3810

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EXISTING COURSE INFORMATION	INFORM	IATION				-	MODIFIED	D COURSE	SE INFORMATION				
COURSE ANNEXES, FILES, AND OBJECTIVES	ноияѕ	TYPE INSTRUC TION	Syl	MODIFIC. TION/ DLL(TION	COURSE ANNEXES, FILTS, AND OBJECTIVES	irouns	TYPE INSTRUC TION	S/I RATIO	COURSE ANNEXES, FILES, AND OBECTIVES USED TO PROJECT ADDED MODULES	ноинѕ	TYPE INSTRUC TION	SVI RATIO	// DD
				gav	Launch System Electrical Control Circuits	4.	υ	52:1	Lesson Topic 16.2: Gun Layıng System Electrical Control Circuits	4.4	ប	12.1	
				onv	Launch System Hydraulic Circuits	:	U	52:1	Lesson Topic 16.3: Gun Laying System Hydraulic Circuits	4.1	ບ	12:1	
				aav	Traverse & Elevation + Electronics Servos Control Unit	1.7	ဎ	52:3	Lesson Topic 16.4 Train 6 Elevation + Electronic Servos Control Unit	<u></u>	ပ	12:1	
				ggv	Traverse • Elevation Synchto Control Circuits Subtotal	1.7	0 134	52:3 6:L	Lesnon Topic 16.5: Train 6 Elevation Synchro Control Circuits Subtotal	1.7	C PE1	12:1	
				ng v	Traverse & Elevation Survo Amplifier Subtotal	8.3 2.5 10.8	C PE1	52:1 6:1	Less in Topic 16.6: Train 6 Elevation Servo Amplifier Subtotal	8.3	c PE1	12:1	
				ag V	Traverse & Elevation Fault Isolation Subtotal	8.3 2.5 10.8	PRI	52:1 6:1	Lesson Topic 16.7: Train 6 Elevation Fault Isolation Subtotal	8.3 2.5 10.8	ne c	12:1 6:1	
	·			ABD	Traverso 6 Elevation Planned Maintenance	8.8	เลง	7:9	lesson Topic 16.8: Train & Elevation Planned Maintenance	8.	PE1	7	
									Lesson Topic 16.9: Train 4	14.1	134	6:1	
				ggv V	Traverse & Elevation Operation	14.1	234	6:3	Blevation Operation	- -	ä		
				gav	Examination	2.5	: S	6:1 52:1	Performance Test Written Test	2.5	<u> </u>	12:1	
					Subtotal CSWS Launch System	79.1			Subtotal MK42 Gun Laying	79.1			

Table C3-13 (Con't.) COURSE MODIFICATION WORKSHEET

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11 50 Š **₹** Š S/I RATIO TYPE INSTRUC TION HOURS COURSE ANNEXES, FILES, AND OBJECTIVES USED TO PROJECT ADDED MODULES MODIFIED COURSE INFORMATION SJI RATIO 20:1 52:1 6:1 52:1 52:1 20:1 20:1 2:1 20:1 52:1 2:1 TYPE INSTRUC TION ESFEGG £ 2 3 ₹8₹ HOURS 4.5 5.0 15.0 21.0 unex H: Basic Recovery Skills and knowledge Training COURSE ANNEXES, FILES, AND OBJECTIVES Annex I: M88Al Recovery Vehicle Operation and Maintenance (Operator/Grew) Subtotal Sobtotal Subtotal Annex 3: Pield Recovery Operations MODIFICA FIGN/ DELFTION CODE ž ž ž 70:7 52:11 11:25 \$'1 RA110 28.62.28.8 20:1 20:1 2:1 TYPE INSTRUC TION EXISTING COURSE INFORMATION £82233 ₹85g ¥33 4.5 11.0 16.0 2 12 .0 2 .0 2 .0 HOUPS Annex G: Basic Recovery Skills and Knowledge Training Subtotal Subtotal COURSE ANNEXES, FILES, AND OBJECTIVES Annex II: M88Al Recovery Vehicle Operation and Maintenance (Operator/Crew) REFERENCE. BASELINE. Annex I: Field Recovery Operations

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Annex L: End-of-Course Examination

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Annua K: End"of-Confide Examination

Total Classicom Time

Annex J: Maintenance Refresher Trainer

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common Military Education and Training (CMET)

Annex K: Maintenance Refresher Trainer

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Subtotal

150.1 50.0

fotal Claustoom Time

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fotal Academic Time

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Total Academic Time

Common Military Education and Training (CMET)

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T. REFERENCE, BASELINE 1

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	FYFE IMSTHUG: FION																	_	_			
	MUDI																					
MODIFIED COURSE INFORMATION	COURSE ANNEXES, FLES, AND OBJECTIVES USED TO PROJECT ADDADES AND ADDELES																					
noo a	#/I HATIO																					
MODIFIE	rver INSTRUC FION																					
	HOUNE		a.a	0.5	0.11	ò. F.;	71.0	471.1	50.9													
	COURSE ANNEXES, FILES AND	Administration	this country	(but ger extens in my	Commander's Time	Open Time	Total Honacidemic Time	Tutal Control Time	nded-new ii awit paintert	lostingstons presiden	6 74.3	4·4	FM 19.5	TV 8.5	4'2	7.581 184	5. 4 . 4 . 5. 5. 5. 5. 5. 5. 5. 5. 5. 5. 5. 5. 5	K1 18.1	7,7	MC1 FF.O	TOTAL 150.1	
	MOSUFICA TION/ DELETION CODE	MC.															-					
	8-1 PATIO	P drawningshin appropriate								 												
ATION	TVPB IMSTRIKE FIGN	A STATE OF S	_									_										-
INFORM	HCHURS		0.8	0.8	0.11	oʻ	7.0	0.561	o.											_	_	
EXISTING COURSE INFORMATION	COURSE ANNEXES, FILES, AND OBJECTIVES	Adetnietrative 1186	(पर्ग क्ष्मका क्षा का	for we about and	Commander a rime	was to see the	Tores Moracades to Tree	fotal Course Time	Transport the Nan-Days	Contract town became the	c 15.9	\$ -	PM 19.5	4. b . 5	3.3	PK1 154.1	PR1 6.5	Q - 8 3 H	* · · ·	MC1 29.4	Potal 231.0	

Table C3-11 course modification worksheet

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EXISTING COURSE INFORMATION
TYPE STI TION/ COURSE ANNEXES, FILES, AND TION OBJECTIVES CC E
C 24 1 NK Annex A: PEJ 20:1
C 24:1 NC Annex B: Basic M. TV 24:1 Skills/Knowledges D 20:1 6:1 PE3 20:1 F 24:1 Subr
PH 20:1 NC Annex C:] TV 24:1 Maintenance PE3 20:1 E1 4:1
PE1 6:1 NC Annex D: 1 PE3 20:1 H Maintenance E1 4:1
PM 20:1 NC Annex E: 5 PE1 6:1 Maintenance PE2 6:1 4:1
PM 20:1 NC Annex F: 2 TV 24:1 Maintenance PE3 20:1 E1 4:1

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Table C3-14 (Con't.) course modification worksheet

W REFERENCE, BASELINE

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95 Ϋ́ 31 S/I RATIO 12:1 6:1 12:1 12:1 12:1 12:1 TYPE INSTRUC TION C PE1 c PE1 O ပ ပ 3.3 5.8 8.3 4.1 1.7 HOURS Lesson Topic 16.4: Train & Elevation & Electronics Servos Control Unit Lesson Topic 16.5: Train & Elevation Synchro Control Circuits Lesson Topic 16.1: Gun System Component Arrangemen! and Function COURSE ANNEXES, FILES, AND OBJECTIVES USED TO PROJECT ADDED MODULES Lesson Topic 16.2: Gun Laying System Electrical Control Circuits Lesson Topic 16.3: Gun Laying System Hydraulic Circuits Subtotal Subtotal From: Navy Course A-113-0044 Gun Mount 5"/54 MK42 MOD 9+10 MODIFIED COURSE INFORMATION S/I RATIO 20:1 20:1 6:1 6:1 6:1 4:1 24:1 6:1 24:1 6:1 20:1 24:1 6:1 4:1 24:1 24:1 24:1 TYPE INSTRUC TION PM TV PE1 PM ST SI OC PE1 PE1 C PE1 C PE1 ပ O HOURS 3.3 .9 .6 .8.0 .8.0 3.0 6.0 6.0 1.0 1.0 3.0 1.7 1.7 Traverse & Elevation Synchro Control Circuits COURSE ANNEXES, FILES, AND OBJECTIVES Annex I: CSWS Maintenance Annex G: 1/4 Ton Vehicle Maintenance Traverse & Elevation & Electronic Servos Control Unit Ti ubleshooting Launch System Component Arrangement and Function Launch System Electrical Control Circuits Launch System Hydraulic Circuits Subtotal Subtotal Subtotal Annex H: MODIFICA TION/ DELETION CODE ADD ADD ADD ADD ADD ž ž S/I RATIO 20:1 24:1 6:1 20:1 20:1 6:1 6:1 6:1 4:1 TYPE INSTRUC TION EXISTING COURSE INFORMATION PM ST SI OC PE1 PE1 PM TV PE1 .9 .6 .6 .8.0 32.0 HOURS COURSE ANNEXES, FILES, AND OBJECTIVES Annex G 1/4 Ton Vehicle Maintenance Subtotal Annex H: Troubleshooting Subtotal

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COURSE 610-63W10

Table C3-14 (Con't.) course modification worksheer

EXISTING COURSE	INFORMATION	ATION					MODIFIED	noo a	COURSE INFORMATION				
COURSE ANNEXES, FILES, AND OBJECTIVES	HOURS	TYPE INSTRUC TION	S/I RATIO	MODIFICA TION/ DELETION	COURSE ANYEXES, FILES, AND OBJECTIVES	HOURS	TYPE INSTRUC TION	S/I RATIO	COURSE ANNEXES, FILES, AND OBJECTIVES USED TO PROJECT ADDED MODULES	HOURS	TYPE INSTRUC- TION	S/I RATIO	# 99
				ADD	Traverse & Elevation Servo Amplifier	8.3	C PE1	24·1 6:1	Lesson Topic 16.6: Train 6 Elevation Servo Amplifier	2.5	c PE1	12:1	
				ADD	Subtotal Traverse & Elevation Fauit Isolation	8.3 2.5	C PE1	24:1	Subtotal Lesson Topic 16.7: Train 6 Elevation Fault Isolation Subtotal	10.8 2.5 10.8	C PE1	12:1	
				ADD	Traverse & Elevation Planned Maintenance		PE1	6:1	Lesson Topic 16.8: Train & Elevation Planned Maintenance	8.8	PEl	6:1	
				ADD	Traverse & Elevation Operation	14.1	134	6:1	Lesson Topic 16.9: Train & Elevation Operation	14.1	PEl	6:1	
				ADD	Examination	9.1	E3	4:1	Performance Test Written Test	9.1	E3	1:1	
					Subtotal CSWS Launch System	79.1			Subtotal MK42 Cun Laying	79.1			
Annex I: Basic Recovery Skills/Knowledges	11.2	PM 7V QC PE1	20:1 24:1 20:1 4:1	ъ У	Annex J: Basıc Recovery Skill/Knowledges	12.0 2.0 3.2 2.0	P.W. 77V P.E.1 P.E.1 P.E.2 P.E.3 P.E	20:1 24:1 20:1 4:1 6:1					N/N
Subtot 1	27.0	i i	1:97		Subtotal	27.0	}	<u> </u>					
Annex J: 5 Ton Wrecker Operation	13.0 1.0 1.0 17.0	PE CC CC PE	20:1 20:1 24:1 2:1 6:1	S S	Annex K: 5 Ton Wrecker Operation	13.0 1.0 1.0 .5 17.0 1.0	PM TV QC F F PF1 PE2	20:1. 24:1. 20:1. 24:1. 2:1. 20:1.					N/A
Subtotal	40.0		22.		Subtotal	2.0	19	5:1					

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Table C3-14 (Con't.) course modification worksheer

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EXISTING COURSE INFORMATION	INFORM	ATION				~	MODIFIED	D COURSE	RSE INFORMATION				
COURSE ANNEXES, FILES, AND OBJECTIVES	ноияѕ	TYPE INSTRUC TION	S/I RATIO	MODIFICA TION/ DELÉTION CODE	COURSE ANNEXES, FILES, AND OBJECTIVES	HOURS	TYPE INSTRUC TION	S/I RATIO	COURSE ANNEXES, FILES, AND OBJECTIVES USED TO PROJECT ADDED MODULES	HOURS	TYPE INSTRUC TION	S/A HATIO	# 55
Annex K: Heavy Equipment Transporter (HFT) Operation	13.0	PH PE1 PE2 PE3	20:1 2:1 6:1 20:1 2:1	NC	Annex I., Heavy Equipment Transporter (HET) Operation	13.0	PM PE1 PE2 PE3	20:1 2:1 6:1 20:1 2:1					N/A
Annex L: Maintenance Review	1.7 24.0 3.0 3.0 30.5	PM 17V 7E1 PE1	20:1 24:1 6:1 4:1	NC	Annex M: Maintenance Review Subfotal	1.7 24.0 3.0 1.0	PM TV PE1 PE2	20:1 24:1 6:1 4:1					N/A
Annex M: End of Course Examination Tural Classroom Time	25.0	ជ	4	NG.	Annex N: End of Course Examination Total Classfoom Time	25.0	ផ	4:1					N/A
Annex N: Common Military Education and Training Totil Academic Time	66.0			S S S	Annex O: Common Military Education and Training Total Academic Time	60.0							N/N N/A
Administrative Time Inprocessing Outprocessing Commander's Time Open Time	8.0 8.0 9.0			S Z		8.0 8.0 19.0							
Total Nonacademic Time Total Course Time	44.0				Total Nonacademic Time Total Course Time	44.0							
Training Time in Nan-Days	0.09				Training Time in Man-Days	6.69							

Table C3-14 (Con't.) course modification workshear

W REFERENCE, BASELINE

610-63810 COURSE

63#10

MOS

99 S/I RATIO TYPE INSTRUC TION HOURS COURSE ANNEXES, FILES, AND OBJECTIVES USED TO PROJECT ADDED MODULES MODIFIED COURSE INFORMATION S/I RATIO TYPE INSTRUC TION HOURS COURSE ANNEXES, FILES, AND OBJECTIVES Instructional Breakdown 74.2 5.9 8.2 11.0 44.5 44.5 13.9 213.9 21.8 63.1 21.8 63.1 Total MODIFICA TION/ D: (£TION CODE S/I RATIO TYPE INSTRUC TION EXISTING COURSE INFORMATION HOURS COURSE ANNEXES, FILES, AND OBJECTIVES Instructional Breakdown 35.8 5.9 8.2 1.0 44.5 3.0 6.0 6.0 7.0 21.8 7.0 Total

MIL CW

B-man Daligherin B

L. Phony Carriers, 5

MIL CW4

Table C3-15 course modification worksheet reference, BASELINE...?

MOS 63H10

COURSE 611-631110

EXISTING COURSE INFORMATION	INFORM	ATION					MODIFIE	noo a	MODIFIED COURSE INFORMATION				
COURSE ANNEXES, FILES, AND OBJECTIVES	ноикѕ	TYPE INSTRUC TION	S/I HATIO	MODIFICA TION/ DELETION CODE	COURSE ANNEXES, FILES, AND OBJECTIVES	HOURS	TYPE INSTRUC TION	S/I RATIO	COURSE ANNEXES, FILES, AND OBJECTIVES USED TO PROJECT ADDED MODILLES	HOURS	TYPE INSTRUC TION	S/I HATIO	// pp
Annex A: Course/Soldier's Mancal Ottentation	1.0	၁	52:1	NC	Annex A: Course/Soldrer's	1.0	ပ	52:1					N/A
Subtotal	2.0	¥.	20:1		Subtotal	2.0	×	20:1					
Annex B; Basic Maintenance Skills and Knowledge	34.9	טם	52:1 20:1	S S	Annex B: Dasic Maintenance Skills and Knowledge	34.9	أمن	52:1			-		N/A
	3.0	77 PE1 E3	52:1 6:1 52:1 52:1			3.0 3.0 3.0 3.0	PE1 PE3 E3	52:1 52:1 52:1			·		
Subtotal	0.09				Subtotal	0.09							
Annex C: P60Al Tank Maintenance Subtotal	42.5	rv Pel	52:1 6:1 4:1	NC	Annex C: M60Al Tank Maintenance Subtotal	42.5	77 PES1 E3	52:1 6:1 4:1					₹
Annex D: M110 Self-Propelled Artillery Maintenance Subtotal	9.0 1.0 10.0	13	6:1	Q.	Annex D: MllO Self-Propelled Artillery Maintenance Subtotal	9.0 1.0	PEl	6:1					N/N
Annex E: Mll]Al Armoled Personnel Carrier (APC) Maintenance	14.0 27.6 3.0	77 PE1	52:1 6:1 4:1 4:1	Si Si	Annex E: Mll3Al Armored Personnel Carrier (APC) Maintenance	.4 14.0 27.6 3.0 45.0	TV PE1 PE1	52:1 6:1 4:1					K/N
Annex F: Troubleshooting Fuel and Electrical Systems	13.0	PE1 E1	4:1	N N	Annex F: Troubleshooting Fuel and Electrical Systems Subtotal	13.0	PEI	4:1					N/A
				<u></u>	Annex G: CSWS Maintenance				From: Navy Course A-113-0044 Gun Mount 5"/54 HK42 MOD 9 + 10				
				ADD	Launch System Component Arrangement and Function	3.3	v	52:1	Lesson Topic 16.1; Gun System Component	3.3	U	12:1	<u>ب</u>
					Subtotal	5.8	PE1	6:1	Arrangement and Function Subtotal	2.5 5.8	PEl	6:1	

Table C3-15 (Con't.) COURSE MODIFICATION WORKSHEET

COURSE 611-6 1810

63810

MOS

₩ 55 12:1 6:1 6:1 S.A RATIO 12:1 6:1 12:1 6:1 7: 12:1 12:1 12:1 TYPE INSTRUC TION , T PE) c PE1 PE1 c PE1 E3 U ပပ HOURS 4.4 10.0 8.3 2.5 10.8 8.3 2.5 10.8 14.1 7.6 1.7 Lesson Top.2 16.2; Gun Laying System Electrical Control Cricuits Lesson Topic 16.4: Train 4
Elevation + Electronic Servos
Control Unit Lesson Topic 16.7: Train & Blevation Fault Isolation COURSE ANNEXES, FILES, AND OLUECTIVES USED TO PROJECT ADDED MODULES Lesson Topic 16.9: Train & Elevation Operation Lesson Topic 16.5: Train & Elevation Synchro Contro? Circuits Lesson Topic 16.6: Train 6 Elevation Servo Amplifier Train 6 Subtotal Subtotal Subtotal Lesson Topic 16.3: Gun Laying System Hydraulic Circuits MODIFIED COURSE INFORMATION Lesson Topic 16. Elevation Planner Maintenance Performance Test 52:1 S/I RATIO 52:1 52:1 6:1 6:1 52:1 6:1 6:1 6:1 52:1 52:1 6:1 TYPE INSTRUC TION PE1 E1 E2 PE c PE1 c PE1 ÞΕΙ U ပ ပ HOURS <u>.</u>. 5.4 5.4 5.0 7.7 ٥. 5.9 7.1 4.6 1.3 COURSE ANNEXES, FILES, AND OBJECTIVES Subto: 11 Subtotal Subtotal Elevation Synchrol Control Circuits Elevation Servo Amplitter Elevation fault Isolation Launch System Electrical Control Circuits Launch System Hydraulic Circuits Elevation & Electronic Servos Control Unit Elevation Operation Elevation Plannod Maintenance MUDUI ICA TION/ DELETION CODE ADD AUD ADD ADD ADD ADD ADD ADD S/1 RATIO TYPE INSTRUC TION EXISTING COURSE INFORMATION HOURS COURSE ANNEXES, FILES, AND OBJECTIVES REFERENCE, BASELINE 2

C-128

12:1

2.5

ubtotal MK42 Gun Laying

44.7

Subtotal CSWS Launch System

#11# 14 1

COURSE 611

Table C3-15 (Con't.) course modification worksheet

REFERENCE BASELINE, 2

611-631110

631310

MOS

911 coupt of

// pp ₹ 2 N/A N/A × × ž Š S/I RATIO TYPI INSTRUC TION HOURS COURSE ANNEXES, FILES, AND OBJECTIVES USED TO PROJECT ADDED MODULES MODIFIED COURSE INFORMATION S/I RATIO 4:1 20:1 20:1 52:1 6:1 20:1 52:1 20:1 20:1 2:1 20:1 52:1 2:1 6:1 TYPE INSTRUC TION PM CC TV TV PE1 PE3 PE1 PE 1 ¥ 8 3 £ 2 ₹ 315.7 HOURS 5.0 1.0 4.5 11.0 16.0 9.0 1.0 1.0 3.5 1.0 25.0 21.0 15.0 16.0 50.0 365.7 Annex H: Basıc Recovery Skills and Knowledye Traınıng COURSE ANNEXES, FILES, AND OBJECTIVES Subtotal Annex I: M8BAl Recovery Vehicle Operation and Maintenance (Operator/Crew) Subtotal Subtotal Common Military Education and Training (CMET) Annex J: Field Recovery Operations Annex L: End-of-Course Examination Annex K: Maintenance Refresher Trainer fotal Classroom Time fotal Academic Time MODIFICA TION/ DELETION CODE ž ŭ ž ž ဗ္ဂ ပ္ခ 20:1 20:1 52:1 6:1 20:1 52:1 20:1 52:1 2:1 6:1 Ţ: **‡** 20:1 20:1 2:1 TYPE INSTRUC TION EXISTING COURSE INFORMATION PE1 PE1 E3 £ & ₹ 돌수꽃 PEI 133 9.0 1.0 9.0 3.5 1.0 25.0 5.0 1.0 15.0 21.0 4.5 11.0 16.0 HOURS 16.0 271.0 321.0 15.0 50.0 Annex G: Basic Recovery Skills and Knowledge Training Subtotal Subtotal Subtotal COURSE ANNEXES, FILES, AND OBJECTIVES Annex H: M88Al Recovery Vehicle Operation and Maintenance (Operator/Crew) Common Military Education and Training (CMET) Annex 1: Field Recovery Operations Annex K: End-of-Course Examination Annex J: Maintenance Refresher Trainer Total Clissroom Time Total Academic Time

Table C3-15 (Con't.) COURSE MODIFICATION WORKSHEET REFERENCE, BASELINE 2	't.) 46ET				COURSE		611-63110		- SOW	63H10			1
EXISTING COURSE	INFORMATION	ATION		No. of the Control of		_	MODIFIED	D COURSE	ISE INFORMATION				
COURSE ANNEXES, FILES, AND OBJECTIVES	HOURS	TYPL INSTRUC TION	S/I RATIO	MODIFICA TION/ DEL CTION	COURSE ANNEXES, FILLS, AND OBJECTIVES	HOURS	IYPE INSTRUC TION	S/I BATIO	COURSE ANNEXES, FILES, AND OBJECTIVES USED TO PROJECT ADDED MODULES	ноия	TYPE INSTRUC 710N	SVI	// 99
Achinistiative Time				ZC ZC	Administrative Time				Total Control of the				N/A
Inprocessing	0.8				funcesano idul	8.0							
(hat processing	0.8				Outprocessing	9.0							
Commander's Time	31.0		-	_	Commander's Time	31.0							
amij, uado	24.0				Open Time	24.0							
Fotal Nonacademic Time	71.0			<u>.</u> .	Total Nonacademic Time	71.0							
Fotal Course Time	392.0			<u>-5-</u>	Total Course Time	436.7					•		
Training line in Man-Days	0.64			<u> </u>	Training Time in Man-Days	54.6						_	
			_										
Instructional Breakdown				_ _ _	Instructional Breakdown								
6 35.9					c 58.7								
3.5					0 4.5								
PH 19.5					PM 19.5			 .					
TV 8.5					TV 8.5								
2.5					QC 2.5								
Pt.1 154.1					PE1 170.1								
PE: 6.5					PE) 6.5								
0.6 13					El 13.6			-				-	
E3 4.5					E3 5.8								
₩C1 <u>26.0</u>					WC1 . 26.0								_
Total 201.0				<u>_</u>	Total 115,7								

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Table C3-16 course Modification Worksheet

COURSE 610-63W10

63W10

MOS

REFERENCE, BASELINE

	_						
	99	X X	8/8	× ×	× ×	A/N	N/N
	871 BATIO		···			···	
	TYPE INSTRUC: TION						
	HOURS						
COURSE INFORMATION	COURSE ANNEXES, FILES, AND OBJECTIVES USED TO PROJECT ADDED MODULES						
	S/I RATIO	24:1 20:1	24:1 24:1 20:1 6:1 20:1 24:1	20:1 24:1 6:1 20:1 4:1	6:1	20:1 6:1 4:1	20:1 24:1 4:1 20:1 4:1
MODIFIED	TYPE INSTRUC TION	C PE3	C 24 C FEI	PM 77 PE 1 P	PE1 PE3 E1	PM PE1 E1	PH TV PE1 PE3 E1
ATION	HOURS	2.6	2. 4. 6. 6. 2. 6.	0. 4. 4. 6. 6. 6. 6. 6. 6. 6. 6. 6. 6. 6. 6. 6.	3.0 3.0 9.5	1.0 22.5 1.5 7.0 32.0	. 5 16.7 . 1 6.0
	COUNSE ANNEXES, FILES, AND OBJECTIVES	Annex A: Orientation Subtoral	Annex B: Basic Maintenance Skills/Knowledges	Subtotal Annex C: 1-1/4 Ton Vehicle Maintenance	Subrotal Annex D: 14 Ton Vehicle Maintenance Subtotal	Annex E: 5 Ton Vehicle Maintenance Subtotal	Annex F: 2-1/2 Ton Vehicle Maintenance Subtotal
	MODIFICA TION/ DELETION CODE	S X	NC NC	Š	NC	NC	NC NC
	S.II RATIO	24:1 20:1	24:1 24:1 20:1 20:1 20:1 24:1	20:1 24:1 0:1 20:1 4:1	6:1 20:1 4:1	20:1 6:1 4:1	20:1 24:1 4:1 20:1 4:1
	TYPE INSTRUC TION	5 E 3 A	550 188 188 188 188 188 188 188 188 188 18	PE 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	7 E E E E E E E E E E E E E E E E E E E	PR PE 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	PM TV PE1 PE3
INFORM	HOURS	1.4	3.6 5.9 6.5 10.5 8.3	24.5	6.0 1.0 9.5	1.0 22.5 1.5 7.0	. 5 16. 7 1 6.0 24.0
EXISTING COURSE INFORMATION	COURSE ANNEXES, FILES, AND OBJECTIVES	Annex A: Orientation Subtotal	Annex B. Basic Maintenance Skills/Knowledges	Subtotal Annex C: 1-1/4 Ton Vehicle Maintenance Subtotal	Annex D: 14 Ton Vehicle Maintenance Subtotal	Annex C: 5 Ton Vehicle Maintgnance Subtotal	Annex F: 2-1/2 Ton Vehicle Maintenance Subtotal

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Table C3-16 (Con't.) course modification worksheer Reference. Baseline...

MOS 67W10

COURSE 610-63W10

NEC	EXISTING COURSE INFORMATION					MODIFIED		COURSE INFORMATION				
HOURS INSTRUC SJI TION/ TION RATIO DILETION CODE		MODIFICA TION/ UI 14 TION 2001.	<u></u>	COURSE ANNEXES, FILES, AND	HOURS	TYPE MSTRUC TION	S/1 RAT10	COURSE ANNEXES, FILES, AND OBJECTIVES USED TO PROJECT ADDED MODULES	HOUHS	TYPE INSTRUC TION	S/I RATIO	# 55
.9 PM 20:1 NC .6 1 22:5 PE1 6:1 4:1	N. C.		,	Annex G: 1/4 Ton Vehicle Maintenance		P# 7 V 129 139	20:1 24:1 6:1					X/X
PM 20:1 NC ST 20:1 CC CO:1 PE2 6:1 FE2 6:1 E1 E1 E1	N C		≪	Annex II: Troubleshooting	3.00 3.00 3.00 3.00 3.00 3.00 3.00	PA ST ST PE PE E	20:1 20:1 20:1 6:1 4:1					<
		\	Ę	Subtotal Annex 1: CSWS M ntenance	31.0			From: Navy Course A-113-0044 Gun Mount 5"/54 MK42 MOD 9+10				
ADD			ž.	Launch System Companent Arrangement and Punction Subrotal		C PE1	24:1	Lesson Topic 16.1: Gun System Component Arrangement and Function Subtotal	2.5	c PE1	12:1	ĩ
Abb La			38	Launch System Electrical Control Circuits	7:2	v	24:1	Lesson Topic 16.2: Gun Laying System Electrical Control Circuits	4.	υ	12:1	
ADD CL			35	Launch System Hydraulic Circuits	1;	v	24:1	Lesson Topic 16.3: Gun Laying System Hydraulic Circuits	;	U	12:1	
ADA ADA A			or to	Elevation & Electronic Servos Control Unit	ø.	ပ	24:1	Lesson Topic 16.4: Train 6 Elevation 6 Electronics Servos Control Unit	1.7	ပ	12:1	
νου (C)			ធ ខ	Elevation Synchro Control Circuits Subtotal	6.1	C PE1	24:1 6:1	Lesson Topic 16.5; Train a Elevation Synchro Control Circuits Subtotal	8.3 1.7 10.0	C PR1	12:1	

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31 4

Table C3-16 (Con' 1:.)
COUNSE MODIFICATION WORKSHEET
REFERENCE, BASELINE 3

COURSE 610-6 141

SO

	· 							· · · · · · · · · · · · · · · · · · ·		
	# 50							<u> </u>	Š.	
	SUI RATIO	12:1	6:1	6:1	5:1	1:1				
	TYPE INSTRUC TION	c E3	C 96.1	7.61	184	13				
	HOUR\$	8.3 2.5 10.8	8.3 70.8	8.8	14.1	9.1 2.5				
MODIFIED COURSE INFORMATION	COURSE ANNEXES, FILES, AND OBJECTIVES USED TO PROJECT ADDED MODULES	Lesson Topic 16.6: Train 6 Rievation Servo Amplifier Subtotal	Lesson Topic 16.7: Teain & Elevation Fault Isolation Subtotal	Lesson Topic 16.8: Train & Elevation Planned Maintenance	Lesson Topic 16.9: Train 6 Elevation Operation	Performance Test Mritten Test Subtotel MK42 Gun Laving				
D COUR	S./I	24:1	24:1	6:1	6:1	4:1		20:1 20:1 4:1 6:1	20:1 24:1 24:1 24:1 20:1 20:1	
AODIFIE	TYPE INSTRUC TION	134 C	C PE1	<u>s</u>	PK1	22		7 A A A A A A A A A A A A A A A A A A A	2	
-	ноиия	→	7.7	2.9	7.7	6.6		12.0 2.2 5.6 5.6 27.0	13.0 1.0 17.0 1.0 4.5	40.0
	COURSE ANNEXES, FILES, AND OBJECTIVES	Elevation Servo Amplifier Subtotal	Elevation Fault Isolation Subtotal	Elevation Planned Maintenance	Elevation Operation	Examination Subtotal Come famous	System	Annex J: Baste Recovery Skill/Krowledges Subtotal	Annex K: 5 Ton Wrecker Operation	Subrotal
	MODIFICA TION/ DELETION CODE	ADO	ADO	QQV	YDD	ADO		D	U X	
	\$/I RATIO						-	20:1 24:1 20:1 4:1 20:1	20:1 20:1 24:1 20:1 20:1 20:1	
TION	TYPE INSTRIC TION							FEE C 4 F	E E E E E E E E E E E E E E E E E E E	
VFORMA	HOUMS	-						12.0 23.0 23.0 5.6 6.6	24.00	40.0
EXISTING COURSE INFORMATION	COURSE ANNEXES, FILES, AND OBJECTIVES							Skil 1/7 owledges Skil 1/7 owledges Skil 1/7 swledges	Annex J: 5 Tan Mrecker Operation	Subtrital

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Table C3-16 (Con't.) cours. Modercation worksheet

MOS 63W16

	<i>#</i> 55	×	¥ 2	4 /2	×/x	Š					
	SZI RATIO										
	TYPE INSTRUG TION					_					
	HOUHS										
MODIFIED COURSE INFORMATION	COURSE ANNEXES, FILES, AND OBJECTIVES USED TO PROJEC										
noo a	SJI HATIO	20:1 2:1 6:1 20:1 2:1	20:1 24:1 6:1 6:1 6:1	;;							
MODIFIE	TYPE INSTRUC TION	PM PE3 PE3 F 1	PM TV PE1 PE1	12							
	HOULE	11.5 13.0 2.0 2.0	24.0 3.0 10.5	25.0	60.0	480.7	8 .0 19 .0	44.0	524.7	65.6	
	COURSE ANNEXES, FILES, AND OBJECTIVES	Annex 1.: Heavy Equipment Transporter (RET) Operation Subtotal	Annex A: Maintenance Review Subtotal	Annox N: End of Course Examination	Total Classrows Time Annex O: Common Military Education and Training	Total Acadomic Time	Adnin , rative Time inprocessing Cutprocessing Coutprocessing Commander's Time Open Time	Total Nona-adenic Time	Total Course Time	Teathing Time in Man-Days	
	MODIFICA TION/ DLILTION CODI	χ. .:	אַכ	ž	ž		¥				
	8 K I I I	20:1 2:1 6:1 20:1 2:1	200	‡					4		
ATION	TYPE INSTRUC TION	F 2 2 2 2	2 2 2 2 2 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3	<u>=</u>							
INFORM	HOURS	11.5 13.0 10.0 10.0	24.0	\$.0	376.0	436.0	0000	44.0	4.60.0	60.0	
EXISTING COURSE INFORMATION	COURSE ANNEXES, FILES, AND OBJECTIVES	Annew K: Heavy Equipment Transporter (HET) Operation Subtotal	Annex L: Maintenance Review Subtotal	Annex M: Rnd of Course Examination	Total Classroom Time Annex N: Common Military Education and Training	Total Academic Time	Administrative Trae	Potal Nonacademic Time	Time Contract	cathring Time in Man-Days	

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Table C3-16 (Con't.)

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COURSE MODIFICATION WORKSHEEF REFERENCE, BASELINE 3

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MARINE SERVICE STATES OF THE SERVICE SPECIAL S		#A RATIO	
		1746 1104 1104	
	,	HOUMS	
	ATION	KES, FILES HED YO PR DOULES	
	COURSE INFORMATION	COUNTE ANNEXES, FILES, AND OBJECTIVES USED TO PROJECT ADDID MODILES	
	URSE	700 0087	
	ED CO	8/a DATTO	
	MOUIFIED	TYPE IMSTRING THOM	
		HOUNE	
		· GNV	
		COUNSE ANNEXES, FILES, AND	Trace testal fitted blows of the control of the con
		CINNY IS	och See See See
	A CONTRACTOR OF THE CONTRACTOR		The Table
		14000 1404/ 011110 0000	
	services ables of the services	ES HATE	
	TION	TVPF	
	EXISTING COURSE INFORMATION	***************************************	
	JRSE 1	AND	
	00 07	#8, P14.89,	
	EXISTIR	COURS ANNEXES, PILES, AND OBJECTIVES	Interactional Breakdown C
	MANAGANA A PARAMANAN N A PARAMANANAN A PARAMANANAN A PARAMANANAN A PARAMANANAN A PARAMANANAN A PARAMANANANANANANANANANANANANANANANANANAN	COVIET	Total Been Park Been Been Been Been Been Been Been Bee

Table C3-17. New and Modified Courses by System.

	LANCE II	4		7	ю	10	NC	12		16
BASELINES	MLIS	ĸ		9	ω	10	NC	12	14	NC
BASI	I LANCE	7		ហ	ω	10	NC	12	13	NC
SNCE	WHEELED	H		ιΩ	ω	σ	11	12	1 2	15
REFERENCE	TRACKED	H		S	ω	თ	11	12	13	NC
	COURSE TITLE	CSWS Crewman		CSWS Mechanic	LCSS Test Specialist/LANCE Repair.	Field Radio Repair	Tactical Comm. Sys. Op/Mech	Special Electronic Devices Repairer	Track Vehicle Repairer	Wheel Vehicle Repairer
	os f	*		*						
	COUL SE NUMBER	Operator: 043-15xxx	Maintenance:	ASIXX	121-27B10	101-31E20	101-31010	198-35E10	611-63H10	610-63W10

NC No change fro existing course -- No course assigned to system

New course

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APPENDIX C4

TRAINING RESOURCES

APPENDIX C4

TRAINING RESOURCES

C4.1 DETERMINATION OF TRAINING MAN-DAYS

Data for determining training man-days came from two sources. For those courses that were not affected by changes in the CSWS equipment configurations, the training time was taken directly from the program of instruction (POI). The courses affected were modified using the course modification worksheets found in Appendix C3. Where course lengths were found in weeks, .2 weeks of instruction equals one 1 man-day.

Tables C4.1-1 C4.1-5 list the training man-day requirements of the CSWS courses by system. Each table contains two sets of information. The first set lists the training man-day requirements for each course. The second set uses the man-days by course from the first set and multiplies them by a modified student load obtained from the personnel analyses in Section 6. This gives the annual training man-day requirements for each course.

TABLE C4.1-1 TRAINING MANDAY REQUIREMENTS SYSTEM: TRACKED REFERENCE

MOS	EXISTING COURSE	DELTA	PROPOSED COURSE
15XX AS1 27B 31E 31S 31V 35E 35H 52C 54E 63G 63H 63J	0.0 0.0 158.0 125.0 65.0 52.0 90.0 10.0 57.0 43.0 55.0 49.0	30.8 16.6 15.0 10.0 0.0 0.6 7.6 0.0 0.0 0.0 9.9	30.8 16.6 173.0 135.0 45.0 52.6 97.6 10.0 57.0 43.0 55.0 58.9
638 63W 63Y	43.0 60.0 33.0	0.0 0.0 0.0	43.0 60.0 33.0

MOS	DELTA MANDAYS	PROPOSĘD MANDAYS	ANNUAL LUAD	ANNUAL DELTA MANDAYS	ANNUAL PROPOSED MANDAYS
15XX AS1 27B 31E 31S 31V 35E 35H 52C 54E 63G	30.8 16.6 15.0 10.0 0.0 0.6 7.6 0.0 0.0	30.8 16.6 173.0 135.0 65.0 52.6 97.6 10.0 57.0 43.0	984.0 357.0 136.0 127.0 9.0 239.0 220.0 8.0 171.0 16.0	30307.2 5926.2 2040.0 1270.0 0.0 143.4 1672.0 0.0 0.0	30307.2 5926.2 23528.0 17145.0 585.0 12571.4 21472.0 80.0 9747.0 688.0
636 636 638 63,	0.0 9.9 0.0 0.0 0.0 0.0	55.0 58.9 38.0 43.0 60.0 33.0	20.0 371.0 71.0 133.0 241.0 206.0	0.0 3672.9 0.0 0.0 0.0	1100.0 21851.9 2698.0 5719.0 14460.0 6798.0
TOTAL	90.5	968.5	3309.0	45031.7	174676.7

TABLE C4.1-2 TRAINING MANDAY REQUIREMENTS
SYSTEM: WHEELED REFERENCE

MOS	EXISTING COURSE	DELTA	PROPOSED COURSE
15XX AS1 27B 31E 31S 31V 35E 35H	0.0 0.0 158.0 125.0 65.0 52.0 90.0	30.8 16.6 15.0 19.0 0.0 0.6 7.6 0.0	30.8 16.6 173.0 135.0 65.0 52.6 97.6
520 54E 63G 63H 63U 63S 63W 63Y	57.0 43.0 55.0 49.0 38.0 43.0 60.0	0.0 0.0 0.0 0.0 0.0 9.9 0.0	57.0 43.0 55.0 49.0 38.0 43.0 69.9 33.0

MOS	DELTA MANDAYS	PROPOSED MANDAYS	ANNUAL LÜAD	ANNUAL DELTA MANDAYS	ANNUAL PROPOSED MANDAYS
15XX	30.8	30.8	984.0	30307.2	30307.2
AS1	16.6	16.6	335.0	5561.0	5561.0
27B	15.0	173.0	105.0	1575.0	18165.0
31E	10.0	135.0	119.0	1190.0	16065.0
318	0.0	65.0	9.0	0.0	585.0
31V	0.6	52.6	239.0	143.4	12571.4
35E	7.6	97.6	137.0	1041.2	13371.2
35H	0.0	10.0	8.0	0.0	133/1.2 80.0
52C	0.0	57.0	90.0	0.0	5130.0
54L	0.0	43.0	16.0	0.0	
6 3 6	0.0	55.0	40.0		688.0
63H	0.0	49.0	0.0	0.0	2200.0
63J	0.0	38.0	61.0	0.0	0.0
638	0.0	43.0	111.0	0.0	2318.0
63W	9.9	69 . 9	420.0	0.0	4773.0
63Y	0.0	33.0		4158.0	29358.0
- •	0,0	00.V	0.0	0.0	0.0
TOTAL	90.5	968.5	2674.0	43975.8	141172.8

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TABLE C4.1-3 TRAINING MANDAY REQUIREMENTS SYSTEM: I LANCE

MOS	EXISTING	DELTA	PROPOSED
	COURSE		COURSE
			COOKSE
15XX	0.0	40.9	40.9
AS1	0.0	16.6	
27B	158.0		16.6
		15.0	173.0
31E	125.0	15.0	140.0
31S	65.0	0.0	65.0
31V	52.0	0.0	52.0
35E	90.0	7.6	97.6
35H	10.0	0.0	10.0
520	57.0	0.0	57.0
54E	43.0	0.0	43.0
63G	55.0	0.0	55.0
63H	49.0	9.9	58.9
63J	38.0	0.0	38.0
638	43.0		
63W		2.0	43.0
	60.0	0.0	60.0
63Y	33.0	0.0	33.0

MOS	DELTA MANDAYS	PROPOSED MANDAYS	ANNUAL LOAD	ANNUAL DELTA MANDAYS	ANNUAL PROPOSED MANDAYS
15XX AS1 27B 31E 31S 31V 35E 35H 52C 54E 63G 63H 63J 63S 63W 63Y	40.9 16.6 15.0 15.0 0.0 0.0 7.6 0.0 0.0 0.0 0.0 9.9 0.0 0.0	40.9 16.6 173.0 140.0 65.0 52.0 97.6 10.0 57.0 43.0 55.0 58.9 38.0 43.0 60.0 33.0	984.0 335.0 126.0 48.0 9.0 100.0 28.0 8.0 201.0 16.0 10.0 199.0 132.0 88.0 252.0 103.0	40245.6 5561.0 1890.0 720.0 0.0 0.0 212.8 0.0 0.0 0.0 0.0 0.0	40245.6 5561.0 21798.0 6720.0 585.0 5200.0 2732.8 80.0 11457.0 688.0 550.0 11721.1 5016.0 3784.0 15120.0 3399.0
TOTAL	105.0	983.0	2639.0	50599.5	134657.5

TABLE C4.1-4 TRAINING MANDAY REQUIREMENTS
SYSTEM: MLIS

MOS	FYYSTING CUURSE	DELTA	PRUPOSED COURSE
15XX AS1 27B 31E 31S 31V 35E 35H 52C	0.0 0.0 158.0 125.0 65.0 52.0 90.0 10.0 57.0	40.7 11.9 15.0 15.0 0.0 0.0 7.6 0.0	40.7 11.9 173.0 140.0 65.0 52.0 97.6 10.0
54E 63G 63H 63J 638 63W 63Y	43.0 55.0 49.0 38.0 43.0 60.0 33.0	0.0 0.0 5.6 0.0 0.0 0.0	43.0 55.0 54.6 38.0 43.0 60.0 33.0

MOS	DELTA MANDAYS	PROPOSED MANDAYS	ANNUAL LÜAD	ANNUAL DELTA MANDAYS	ANNUAL PRUPUSED MANUAYS
15XX	40.7	40.7	984.0	40048.8	40048.8
ASI	11.9	11.9	223.0	2653.7	2653.7
27B	15.0	173.0	63.0	945.0	10899.0
31E	15.0	140.0	41.0	615.0	5740.0
318	0.0	65.0	9.0	0.0	585.0
31V	0.0	52.0	100.0	0.0	5200.0
35E	7.6	97.6	28.0	212.8	2732.8
35H	0.0	10.0	8.0	0.0	80.0
52C	0.0	57.0	80.0	0.0	4560.0
54E	0.0	43.0	16.0	0.0	688.0
636	0.0	55.0	10.0	0.0	550.0
63H	5.6	54.6	124.0	694.4	6770.4
63J	0.0	38.0	71.0	0.0	2698.0
638	0.0	43.0	111.0	0.0	4773.0
63W	0.0	60.0	199.0	0.0	11940.0
63Y	0.0	33.0	41.0	0.0	1353.0
TOTAL	95.8	973.8	2108.0	45169.7	101271.7

TABLE C4.1-5 TRAINING MANDAY REQUIREMENTS
SYSTEM: LANCE II

MOS	EXISTING	DELTA	PROPOSED
	COURSE		COURSE
15XX	0.0	34.0	34.0
ASI	0.0	12.0	12.0
27B	158.0	15.0	173.0
31E	125.0	15.0	140.0
318	65.0	0.0	65.0
317	52.0	0.0	52.0
35E	90.0	7.6	97.6
35H	10.0	0.0	10.0
520	57.0	0.0	57.0
54E	43.0	0.0	43.0
636	55.0	0.0	55.0
63H	49.0	0.0	49.0
63J	38.0	0.0	38.0
63%	43.0	0.0	43.0
63W	60.0	5.6	65.6
63Y	33.0	0.0	33.0

MOS	DELTA MANDAYS	PROPOSED MANDAYS	ANNUAL LUAD	ANNUAL DELTA MANDAYS	ANNUAL PROPOSED MANDAYS
15XX	34.0	34.0	984.0	33456.0	33456.0
AS1	12.0	12.0	268.0	3216.0	3216.0
27B	15.0	173.0	105.0	1575.0	18165.0
31E	15.0	140.0	48.0	720.0	6720.0
318	0.0	65.0	9.0	0.0	585.0
31V	0.0	52.0	100.0	0.0	5200.0
35E	7.6	97.6	28.0	212.8	2732.8
35H	0.0	10.0	೪.೦	0.0	80.0
520	0.0	57.0	121.0	0.0	6897.0
54Ł	0.0	43.0	16.0	0.0	688.0
636	0.0	55.0	20.0	0.0	1100.0
63H	0.0	49.0	0.0	0.0	0.0
63J	0.0	38.0	102.0	0.0	3876.0
635	0.0	43.0	221.0	0.0	9503.0
63W	5.6	65.6	294.0	1646.4	19286.4
63Y	0.0	33.0	0.0	0.0	0.0
TOTAL	89.2	967.2	2324.0	40826.2	111505.2

The personnel analysis does not take into account course attrition. In order to determine an approximation of this personnel factor, the Cost Analysis Program (MOS Training Costs) RCS ATRM-159 report from the Ordnance School was analyzed and attrition for CSWS courses or courses similar to those associated with CSWS was determined.

Overall it was found that the attrition rate was 8% for these courses. The personnel requirements for all MOS were increased by this factor to insure that at the conclusion of training, there would be sufficient personnel to man the various CSWS configurations.

C4.2 DETERMINATION OF NUMBER OF INSTRUCTORS

There were four steps involved in the determination of the number of instructors for the CSWS study. These steps follow directly the instructor determination algorithm found in the Staffing Guide for U.S. Arm; Service Schools (DA Pam 570-558). During the first step, worksheets were developed for each course by system in order to list the hours of instruction for each type of instruction associated with each course. The data for these worksheets were taken from the Program of Instruction (POI) for those courses not modified for CSWS and from the course modification

worksheets in Appendix C3 for those courses that were affected by the CSWS equipment configurations.

During the second step, the total number of instructor contact hours (ICH) for each course were determined. A second worksheet was used to list each course by system with the proposed type and hours of instruction developed in the first step. The number of sections and groups was then determined for each type of instruction. This information was taken from the ICH Computation Worksheet (TRADOC Form 377-R) for those POI that included them. DRC encountered difficulties in obtaining ICH worksheets for some POI. Where these difficulties occurred, the optimum class sizes were obtained and sections and groups were determined based on the student/instructor ratios recommended by either TRADOC Cir 351-12 or DA Par 570-558.

The third and fourth steps in the instructor determination process are found in Tables C4.2-1 - C4.2-5. These tables include the MOS and total POI ICH developed in the previous steps. In step three the total POI ICH is multiplied by the course frequency to determine the total, annual ICH for each course. Course frequency is determined by dividing the proposed student load by the existing optimum class size.

Table C4.2-1 Instructor Requirements
System: Tracked Reference

MOS	TOTAL POI ICH	COURSE	TOTAL AN	NUAL ICH	NUMBER OF
	DELTA NEW	FREQ	DELTA	NEW	INSTRUCTORS
15XX 931 278 315 319 35E 35H 52C 54E 63G 63H 63J 63Y	345.0 345. 127.9 127. 206.0 2273. 190.2 3518. 0.0 1336. 27.6 2071. 201.6 1700. 0.0 331. 0.0 1356. 0.0 533. 421.1 2735. 0.0 483. 0.0 1304.0 0.0 307.	71.4 3 22.6 4 6.4 2 0.8 6 6.8 11.0 1.3 3.5 0.7 1.7 7.1 5.9 3.8 10.0	23290.0 9132.1 4655.6 1217.3 0.0 137.7 2217.6 0.0 0.0 0.0 2939.3 0.0 0.0	28290.0 9132.1 51376.6 22517.3 1069.0 14086.9 18705.5 165.1 7900.2 949.5 914.6 19424.9 2353.2 4872.0 13046.0 8316.2	22.6 7.3 41.1 13.0 0.9 11.3 15.0 0.1 6.3 0.3 0.7 15.5 2.3 3.9 10.4 6.7

Table C4.2-1 Instructor Requirements
System: Tracked Reference

MOS	TOTAL F DELTA	POI ICH MEW	COURSE FREQ	TOTAL AN	NUAL ICH NEW	NUMBER OF INSTRUCTORS
15% 961 278 315 319 35E 35H 520 54E 63G 63H 63U 63Y	345.0 127.9 206.0 190.2 0.0 27.6 201.6 0.0 0.0 421.1 0.0 0.0	345.0 127.9 2273.3 3513.4 1336.2 2071.6 1700.5 127.0 331.6 1356.5 533.0 2735.9 483.6 1282.1 1304.6 307.4	32.0 71.4 22.6 6.4 0.3 6.3 11.0 1.3 9.5 0.7 1.7 7.1 5.9 3.3 10.0 10.3	23290.0 9132.1 4655.6 1217.3 0.0 137.7 2217.6 0.0 0.0 0.0 2939.3 0.0 0.0	23290.0 9132.1 51376.6 22517.3 1069.0 14036.9 18705.5 165.1 7900.2 949.5 914.6 19424.9 2353.2 4872.0 13046.0 3316.2	22.6 7.3 41.1 13.0 0.9 11.3 15.0 0.1 6.3 0.7 15.5 2.3 3.9 10.4 6.7

Table C4.2-3 Instructor Requirements
System: I Lance

MOS	TOTAL POI	ICH	COURSE	TOTAL ANNU	JAL ICH	NUMBER OF
	DELTA	NEW	FREQ	DELTA	NEW	INSTRUCTORS
15XX RSI 278 31E 31S 31V 35E 35H 53C 54E 63H 63J 63S 63M 63Y	349.2 9.9 9.0 201.6 9.0 9.0 9.0 421.1 9.0 9.0	473.4 127.9 2273.3 3677.4 1336.2 2046.4 1700.5 127.0 331.6 1356.5 533.0 2735.9 483.6 1232.1 1304.6 307.4	32.0 67.0 21.0 2.4 0.3 2.8 1.4 1.2 0.7 0.3 3.3 11.0 2.5 10.5	39223.3 3569.3 4326.0 333.1 0.0 0.0 232.2 0.0 0.0 0.0 0.0 0.0	39223.3 3569.3 47739.3 3325.3 1069.0 5729.9 2330.7 165.1 9313.9 949.5 430.4 10396.4 5319.6 3205.2 13693.3 4153.1	31.4 6.9 33.2 7.1 0.9 4.6 1.9 0.1 7.5 0.3 0.3 4.3 2.6 11.0 3.3

Table C4.2-4 Instructor Requirements
System: MLIS

MOS	TOTAL P DELTA	OI ICH	course Freq	TOTAL AN	NEW NEW	NUMBER OF Instructors
15XX	474.6	474.6	32.0	33917.2	33917.2	31.1
ASI	90.0	90.0	44.6	4014.0	4014.0	3.2
278	206.0	2273.3	10.5	2163.0	23369.6	19.1
31E	349.2	3677.4	2.1	733.3	7722.5	6.2
313	0.0	1336.2	0.3	0.0	1069.0	0.9
31V	0.0	2046.4	2.9	0.0	5934.6	4.7
35E	301. 6	1700.5	1.4	232.2	2339.7	1.9
35H	9.9	127.0	1.3	9.0	165.1	0.1
52C	0.0	331.6	4.4	0.0	3659.0	2.9
54E	0.0	1356.5	0.7	0.0	949.5	0.3
63G	0.0	533.0	0.3	9.9	430.4	0.3
63H	227.9	2542.7	2.3	524.2	5343. 2	4.7
63J	0.0	433.6	5.9	9.0	2353.2	2.3
633	9.9	1232.1	3.2	0.0	4102.7	3.3
63W	0.0	1304.6	3.3	0.0	10323.2	3.7
63Y	9.9	307.4	2.1	0.0	1695.5	1.4

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Table C4.2-5 Instructor Requirements
System: Lance II

MOS		ICH COUR NEW FRE		NUAL ICH NEW	NUMBER OF INSTRUCTORS
15XX ASI 278 31E 31S 35E 35H 52C 54E 63G 63H 63J 63Y	90.9 206.0 349.2 9.0 9.0 201.6 13 9.0 9.0 9.0 9.0 9.0	334.9	4872.2 3695.9 4872.2 3695.9 9.9 9.9 9.9 9.9 9.9 9.9 9.9	31561.8 4872.2 39782.7 8825.8 1069.0 6139.2 2380.7 165.1 5571.7 949.5 914.6 4110.6 8077.2 17549.6	25.2 3.9 31.3 7.1 0.9 4.9 0.7 0.7 0.3 6.0 0.0

In step 4, the number of required instructors is determined by dividing the total, annual ICH for each course by 1250 which is the annual amount of instructor contact specified for an instructor in DA Pam 570-558. The algorithm used to determine instructor requirements is summarized as follows.

$$NI = \frac{TICH}{OCS} \times SL \qquad 1250$$

where NI is the number of instructors required for the course; TICI is the total, annual instructor contact hours for the course; OCS is the optimum class size for the course; SI is the proposed student load determined from the personnel analysis; and 1250 is the annual amount of instructor contact specified by DA Pam 570-558.

C4.3 Determination of Training Course Costs

Estimates of the cost per graduate for all CSWS courses were determined directly from computer printouts of the Army Cost Analysis Program (MOS Training Costs) (RCS ATRM-159 (R1), TRADOC Reg 11-5). The data used was the latest MOS course cost data available (FY 1980) and had been converted to FY 1982 dollars.

Of the 16 courses affected by CSWS, seven had the same number of POI man-days as in FY 1980 and appeared to have not changed. Five of the courses had had changes in the POI man-days but appeared to be essentially the same courses.

121-27B10 LCSS Test Specialist/LANCE Repairer
160-31S10 Field General COMSEC Repairer
198-35E10 Special Electronic Devices Repairer
610-63G10 Fuel & Electrical System Repairer
690-63J10 Quartermaster & Chemical Equipment
Repairer

Three of the courses were new and were not in existence in FY1980:

610-63510 Heavy Wheel Vehicle Mechanic

610-63W20 Wheel Vehicle Repairer

611-63Y10 Track Vehicle Mechanic

These courses, as well as two of the courses that had been modified (63G and 63J), were the result of a restructuring of CMF 63 that went into effect during the past year. One of the CSWS courses is an Air Force course for which no course cost data was available: 3AZR32470-000 Radiac Instrument Repair & Calibration.

The first step in determining training course costs was to obtain a per graduate course cost that reflected the current POI being taught. The only data available for both the old and new courses was the length of each course. Since the impact on costs of changing course length affects only the variable cost per graduate, the following algorithm was used to project new course costs.

$$\frac{\Sigma V}{(\frac{1}{C} \times NCL)} + \Sigma F = NCPG$$

where ΣV is the sum of the variable costs; OCL is the old course length; NCL is the new course length; ΣF is the sum of the fixed costs; and NCPG is the new cost per graduate.

For the seven courses that had not changed, no modifications in course costs were necessary. For the remainder of the courses, it was possible to use this algorithm to create a new course cost using the old and new (existing POI) course lengths. For the three new courses, the courses from which they had split were considered to be most like the new courses and were, therefore, used as a basis upon which to project the new course cost. These courses were as follows:

Ex	i	S	t	ĺ	n	g
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MOS	Course Used to Project New Course Cost
63S	610-63B10 Wheel Vehicle Mechanic
63W	610-63H10 Automotive Repairer
63Y	611-63Cl0 Track Vehicle Mechanic

The Air Force course for which no course cost data was available is a joint services course that all the services use to train radiac maintenance personnel. The Army typically sends a Calibration Specialist (35H) to this course. Since the entry level course for the 25H MOS has recently been revised and has no course cost data available, its predecessor 198-35B10 Electronic Instrument Repair Course was used to project a new course cost.

Once per graduate course costs for each of the existing programs of instruction had been derived, new course costs were then projected to reflect the course modifications and student loads dictated by the CSWS design configurations. The algorithm used to obtain the new CSWS course costs is as follows:

$$\frac{\Sigma V}{(\frac{1}{OCL} \times NCL)} + \frac{\Sigma F \times CNG}{NNG + CNG} = NCPG$$

where EV is the sum of the variable costs; OC: is the old course length; NCL is the new course length; EF is the sum of the fixed costs; CNG is the current norm graduates (taken from the ATRM-159 report); NNG is the new norm graduates required for CSWS; and NCPG is the new cost per graduate.

Tables C4.3-1 - C4.3-5 list the annual training course costs for each system. Contained on these worksheets are the new proposed costs per graduate for each student multiplied by the annual training load. As mentioned previously in Appendix C4.1, the number of personnel needed to man the CSWS systems was modified to reflect the affects of course attrition which is not part of the personnel analysis. The final column contains the total, annual training cost for each course.

Table C4.3-1 Annual Training Course Costs
System: Tracked Reference

MOS	PER STUDENT	ANNUAL	ANNUAL
	COST	LOAD	COSTS
15XX	5802.0	984.0	5709168.0
AS1	3131.0	357.0	1117767.0
27B	30418.0	136.0	4136848.0
31E	19666.0	127.0	2497582.0
318	8648.0	9.0	77832.0
317	7994.0	239.0	1910566.0
35E	19531.0	220.0	4296820.0
35H	9008. Ú	8.0	72064.0
52C	13693.0	171.0	2341503.0
54E	10931.0	16.0	174896.0
63G	14774.0	20.0	295480.0
63H	9142.0	371.0	3391682.0
63J	8099.0	71.0	575029.0
638	3626.0	133.0	482258.0
63W	15460.0	241.0	3725860.0
63Y	5706.0	206.0	1175436.0
TOTAL			31980791.0

Table C4.3-2 Annual Training Course Costs System: Wheeled Reference

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MOS	PER STUDENT	ANNUAL	ANNUAL
	COST	LOAD	COSTS
15XX	5281.0	984.0	5196504.0
ASI	3146.0	335.0	1053910.0
27B	31919.0	105.0	3351495.0
31E	19751.0	119.0	2350369.0
318	8648.0	9.0	77832.0
31 V	7994.0	239.0	1910566.0
35E	20733.0	137.0	2840421.0
35H	9007.0	8.0	72056.0
52C	14482.0	90.0	1303380.0
54E	10931.0	16.0	174896.0
6 3G	14491.0	40.0	579640.0
63H	0.0	0.0	0.0
63J	8200.0	61.0	500200.0
6 3 S	3632.0	111.0	403152.0
63 W	12883.0	420.0	5410860.0
63Y	0.0	0.0	0.0
TOTAL			25225281.0

Table C4.3-3 Annual Training Course Costs System: I Lance

MOS	PER STUDENT COST	ANNUAL LOAD	ANNUAL COSTS
15XX ASI	6664.0 3146.0	984.0 335.0	6557376.0 1053910.0
27B	30843.0	126.0	3886218.0
31E	21138.0	48.0	1014624.0
318	8648.0	9.0	77832.0
31V	8186.0	100.0	818600.0
35E	11155.0	28.0	312340.0
35H	9008.0	8.0	72064.0
520	13445.0	201.0	2702445.0
54E	10931.0	16.0	174896.0
6 3 6	14923.0	10.0	149230.0
63H	9388.0	199.0	1868212.0
6 3 J	7567.0	132.0	998844.0
6 3 S	3638.0	88.0	320144.0
6 3W	11818.0	252.0	2978136.0
63Y	5781.0	103.0	595443.0
TOTAL			23530314.0

Table C4.3-4 Annual Training Course Costs System: MLIS

MOS	PER STUDENT COST	ANNUAL LOAD	ANNUAL COSTS
15XX AS1 27B 31E 31S 31V 35E 35H 52C 54E 63G 63H 63J 63S 63W	6636.0 2449.0 35313.0 21236.0 8648.0 8186.0 23297.0 9008.0 14595.0 10931.0 14923.0 9997.0 8099.0 3632.0 11897.0	984.0 223.0 63.0 41.0 9.0 100.0 28.0 8.0 80.0 16.0 10.0 124.0 71.0 111.0	6529824.0 546127.0 2224719.0 870676.0 77832.0 818600.0 652316.0 72064.0 1167600.0 174896.0 149230.0 1239628.0 575029.0 403152.0
63Y	5829.0	41.0	2367503.0 238989.0
TOTAL			18108185.0

Table C4.3-5 Annual Training Course Costs System: Lance II

MOS	PER STUDENT	ANNUAL	ANNUAL
	COST	LOAU	COSTS
15XX AS1 27B 31E 31S 31V 35E 35H 52C 54E 63G 63H 63J	5719.0 2410.0 31919.0 21136.0 8648.0 8186.0 23297.0 9008.0 14157.0 10931.0 14774.0 0.0 7813.0	984.0 268.0 105.0 48.0 9.0 100.0 28.0 3.0 121.0 16.0 20.0 0.0	5627496.0 645880.0 3351495.0 1014528.0 77832.0 818600.0 652316.0 72064.0 1712997.0 174896.0 295480.0 0.0 796926.0
63\$	3603.0	221.0	796263.0
6 3W	12491.0	294.0	367235 4. 0
63 Y	0.0	0.0	0.0
TOTAL			19709127.0

APPENDIX D

PERSONNEL REQUIREMENTS ANALYSIS

This appendix includes the detailed results of the Personnel Requirements Analysis. The contents of Appendix D1 are the personnel flow rates; (1) attrition; (2) promotion; and (3) TTHS overhead percentages. The variation of rates among MOSs and paygrades may be a result of Career Management Field (CMF) structure differences, bonus levels, internal or external policy changes. The importance in measuring these above loss rates is to estimate the quantities and qualities of personnel replacements needed to support present or future system specific manpower requirements.

Appendix D2 contains the personnel requirements for the reference system and baseline systems by MOS/paygrade. Personnel requirement structures will vary according to input rates and the level and quantity of manpower requirements within each MOS. Table 6-2 is an example of the impact of personnel structures given equal quantities of manpower requirement distributed at different skill levels.

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APPENDIX D1
PERSONNEL FLOW RATES

Table D-1. Personnel Flow Rates.

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MOG		15XX
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PAYGRADE	MANPOWER	<u>ATTRITION</u>	UPGRADE	TTHS
E-1	0.	0.516	1.308	0.
E-2	0.	0.360	1.756	0.050
E −3	0.	0.264	0.904	0.046
E-4	0.	0.360	0.268	0.048
E-5	Q.	0.240	0.240	0.030
E-6	0.	0.144	0.148	0.027

MOS = ASI

PAYGRADE	MANPOWER	<u>ATTRITION</u>	UPGRADE	TTHS
E-1	o.	0.516	1.308	0.
E-2	o.	0.360	1.756	0.050
E-3	o.	0.264	0.904	0.04a

MOS = 27B

PAYGRADE	MANPOWER	<u>ATTRITION</u>	UPGRADE	TTHS
E-1	0.	0.336	1.652	٥.
E-2	0.	0.228	1.368	0.050
E-3	0.	0.192	1.224	0.046
E-4	0.	0.280	0.376	0.037
E-5	0.	0.432	0.224	0.038

MOS = 31E

PAYGRADE	MANPOWER	<u>ATTRITION</u>	<u>UPGRADE</u>	<u>TTHS</u>
E-i	0.	0.556	1.412	0.
E-2	0.	0.336	1.432	0.013
E-3	0.	0.180	1.044	0.121
E-4	Ú.	0.324	0.356	0.042
E-5	0.	0.228	0.084	0.042

Table D-1. (Con't.)

OS.	=	3	1	S

PAYGRADE	MANPOWER	ATTRITION	UPGRADE	<u>TTHS</u>
E-1	0.	0.256	1.840	0.
E-2	0.	0.344	1.252	0.170
E-3	0.	0.200	1.064	0.169
E-4	0.	0.364	0.468	0.110

MOS - 31V

<u>PAYGRADE</u>	MANPOWER	ATTRITION	<u>UPGRADE</u>	<u>TTHS</u>
E-1	o.	0.428	1.272	0.
E-2	O.	0.260	1.772	0.080
E-3	Q.	0.188	0.928	0.070

MUS = 35E

PAYGRADE	MANPOWER	<u>ATTRITION</u>	<u>UPGRADE</u>	TTHS	
E-1	0.	0.320	1.456	0.	
E-2	0.	0.156	1.960	0.050	
E-3	υ.	0.176	1.044	0.048	
E-4	Ů.	0.408	0.380	0.003	

1000 = 35H

PAYGRADE	MANPOWER	<u>ATTRITION</u>	<u>UPGRADE</u>	<u>TTHS</u>
E-1	0.	0.284	1.700	0.
E-2	0.	0.268	1.528	0.210
E-3	0.	0.212	1.064	0.201
E-4	0.	0.264	0.508	0.120

Table D-1. (Con't.)

MUS	=	52C		

<u>PAYGRADE</u>	MANPOWER	ATTRITION	<u>UPGRADE</u>	<u>TTHS</u>
E-1 E-2 E-3 E-4	0. 0. 0.	0.384 0.292 0.220 0.400	1.320 1.916 0.972 0.084	0. 0.051 0.043 0.031

MOS = 54E

PAYGRADE	MANPOWER	ATTRITION	UPGRADE	TTUE
E-1 E-2 E-3	o. o. o.	0.340 0.232 0.176	1.548 1.724 0.868	0. 0.058

MUS = 63G

<u>PAYGRADE</u> E-1	MANPOWER	ATTRITION	UPGRADE	TTHS
E-2 E-3 E-4	o. o. o.	0.336 0.372 0.272 0.524	1.512 1.664 0.900 0.260	0. 0.055 0.045 0.048

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PAYGRADE	MANPOWER	ATTRITION	UPGRADE	<u> </u>
E-1 E-2 E-3 E-4	0. 0. 0. 0.	0.312 0.412 0.416 0.636	1.744 1.812 0.948 0.324	0. 0.059 0.049

Table D-1. (Con't.)

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MOS = 63J <u>PAYGRADE</u> E-1 E-2 E-3	MANPOWER O. O.	ATTRITION 0.416 0.344 0.252	<u>UPGRABE</u> 1.608 1.732 0.940	<u>TTHS</u> 0. 0.050 0.040
E-4	0.	0.268	0.132	0.033
MOS = 63S PAYGRADE	MANPOWER	ATTRITION	<u>UP</u> GRADE	TTUE
E-1	0.	0.260		TTHS
E-2 E-3 E-1	o. o. o.	0.272 0.436 0.528	1.788 1.908 1.084 0.120	0. 0.033 0.023 0.035
MOS = 63W				
PAYGRADE	MANPOWER	ATTRITION	UPGRADE	TTHS
E-1 E-2 E-3 E-4	o. o. o.	0.276 0.296 0.304 0.432	1.136 1.960 0.992 0.260	0. 0.051 0.041 0.039
MOS = 63Y				
PAYGRADE	MANPOWER	ATTRITION	UPGRADE	TTHS
E-1 E-2 E+3 E-4	o. o. o.	0.308 0.236 0.344 0.532	1.712 2.120 1.056 0.232	0. 9.040 9.030 9.040

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APPENDIX D2

IMPACT MODEL RESULTS

Tracked Reference. Table D2-1.

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	an.	ezi	\$	Copy of his property (Learning of Commission
RHEAD 905.5 905.5 649.3 99.0 180.1 0.0	SPEE VB	OVERHEAD 125.4 104.2 69.3	OVERHEAD 1058ES PER 7 116.6 63.6 63.6 67.7	Chinging to be to grant the control of the control
OVERHEAD 105552 PER 905.5 649.3 99.0 180.1	OVERHEAD LOSSES PER 428-5 235-6	001 001 001 001 001 000	006 1050	enatis ecosta atmostalini Ongoletica La se escost (
# W	SEE CO.	2000 PER YR	OWER PEB YB 0. 0. 57.6	inite parties anticonstitution of the parties and the parties
178NPOWER 1055E5 PER 0. 0. 439.8 178.0 54.0	AAN SEES PERS SEES PERS SE	MANPOWER LOSSES PER 0.0000	MANPOWER LOSSES PER 0. 0. 57.6	The state of the s
			# 12 mm	
PERSONNEL TO BE TRAINED PER YR. 549.3 538.9 417.1 176.0 89.0	PERSONMEL TO BE 128.5 235.6 195.5	125.4 104.2 104.2 17.2 44.3	PERSONNEL TO BI 116.6 83.6 67.7 30.2	and
TERBOIN	PERSC	e and		Organization and the second
	•			puritimental de la constitución
31 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	ADJUSTED POPER O. 0. 0. 0. 167.4	ADJUSTED O. O. O. O. C. S. S. S. & 67.5	ADJUSTED O. O. O. O. O. O. O. O. O.	de la constitue de la constitu
11HS ADJUSTED HANDOMER 0. 0. 376.6 376.8 370.8	TTHS ADJUG	THE AND A SECOND	DANAN	The second secon
		CUSTED O. O. O	9.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	
905.5 UNALLUSTED HANFOMER 0. 0. 340.0 340.0 340.0 180.0	UNADJUSTED LIANEDMER 0. 0. 160.0	UNADJUSTED UNADJUSTED O. 0. 0. 0. 65.0	UNADJUSTED UNADJUSTED O. 0. 0. 80.0	
* % **********************************	EAR THE EAR	EAR - SENIS	R VEAR = CONNEC. REMENTS 59.2 47.3 55.0	
PECRUITS PER VEAR PERSONNEL PERSONNEL 496.4 496.9 461.4 464.1 370.8 304.8	RECRUITS PER YEAR = PERSONNEL REPUBLINENIS 180.1 111.3 167.4	PECRUITS PER YEAR = PERSONNEL RECRUITS PER YEAR * PERSONNEL INE REQUIREMENTS 67.3 67.3 85.0	and medical political design of the control of the	
5	RECRUET	RECRUI	MECRUI	Patholinina.
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	PASI PAYGRAIN E-3 E-3	278 RE-1 E-3 E-4	PAYGRAME FF-3 F-4 5-4	Den John Marine
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Table D2-1. (Con't.)

	OVERHEAD LUSSES PER YR 8.0 7.0	0	OVERHEAD LOSSES PER YR 215.4 164.3 0.0	0VERHEAD LOSSES PER YR 202.0 165.7 0.0	OVERHEAD LOSSES PER YR 7.1 6.1 5.2
	MANPOWER LOSSES PER YR 0.00	. 	MANPOWER LOSSES PER YR ' 0. ' 0. 143.3	MANPOWER LOSSES PER YR 0. 153.4 16.8	MANPOWER LOSSES PER YR 0. 0. 4.3
	PERSONNEL TO BE IRAINED PER YR. 6.0	. .	PERSONNEL TO BE IRAINED PER YR 219.6 164.3	PERSONNEL TO BE IRAINED PER YR 202.0 165.7 153.4 131.3	PERSONNEL TO BE IMAINED PER YR. 7.1 6.1 5.2 4.3
	TTHS ADJUSTED MANYOWER 0.00000000000000000000000000000000000	ที่	MANPOWER O. O. O. 128.4	TTHS ADJUSTED AMEGNESS O. O. Las. 8 21.3	TTHS ABJUSTED MANECHER
8. 0	UNADJUSTED MANEOWER.	3.0	UNADJUSTED JANKOHER 0. 0. 120.0	202.0 UNADJUSTED PONFOWER 0. 0. 120.0 20.0	7.1 UNADJUSTED MANPOWER 0. 0. 5.0
RECRUITS PER YEAR =	FERSONNEL REQUIREMENTS 3.6 4.4	5.6 RECRUITS PER YEAR #	PERSONNEL REQUIREMENTS 129.2 80.9 128.4	RECRUITS PER YEAR PERSONNEL PERSONNEL 113.8 78,3 125.8 106.6	RECRUITS PER YEAR = PERSONNEL ILE MEQUIREMENIS 3.6 3.4 4.1 5.6
MOS - 31S RECK	PAYGRADE E-1 E-3		PAYGRAUE E-1 E-3 E-3	MOS = 35E RECRI <u>PAYGHABE</u> E-1 E-3 E-4	MOS = 35H RECRI <u>PAYGRADE</u> E-1 E-3 E-3

Table D2-1. (Con't.)

E MANPOWER OVERHEAD LOSSES PER YR	0. 157.2 0. 121.8 105.7 0.0 7.5 78.7	MANP	6.01	1055ES PER YR LOSSES PER YR 0,0 15.0 0.0	E MANPOWER OVERHEAD L. LOSSES.PER.YR	0. 341.6 0. 236.1 236.1 0.0
PERSONNEL TO BE IRAINED PER YR	157.2 121.8 105.7 86.2	PERSONNEL TO BE IRAINED PER YR.	Φ.	PERSONNEL TO BE IRAINED PER YR 18.3 15.0 12.3	PERSONNEL TO BE IBAINED EER YK.	341.6 269.3 266.1
TTHS ADJUSTED MANYOWER	0. 0. 0. 0. 0. 0. 0.	TTHS ADJUSTED HANDOMER	n.	TTHS ADJUSTED OF 0.00.5	TTHS ADJUSTED MANFOWER	0. 0. 173.1
157.2 UNADJUSTED MANPOWER	00 88 00 00 00 00 00 00 00 00 00 00 00 0	15.1 UNADJUSTED MANPOWER	16.3	UNADJUSTED MANPOWER 0. 0. 10.0	341.6 UNADJUSTED "MANYOWER.	0 0 0. 0 0. 0 0. 0 0.
RECRUITS PER YEAR = PERSONNEL	92.3 55.2 88.7 178.0	RECRUITS PER YEAR = PERSONNEL DE MEQUIREMENTS 8.0 6.4	10.5 RECRUITS PER YEAR =	PERSONNEL REQUIREMENTS 9.9 7.4 10.5	RECRUITS PER VEAR = PERSONNEL PE REQUIREMENTS	186.2
MOS = 52C RECRI	까마마메 □ 51 1 1 1 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	MOS = 54E RECRU PAYORADE E-1 E-2		PAYGRAUE E-1 E-3	MOS = 63H RECRU	해 제 제 제 제 하 기 기 기 기 대 제 제 제 제 제

MOS # 53J

OVERHEAD LOSSES PER YR 65.5 52.0 0.0 30.1	0VERHEAD LOSSES PER YR 122.1 106.6 0.0 53.1	0VERHEAD LOSSES PER YR 222.0 178.6 0.0	OVERHEAD LOSSES PER YR 189.1 160.3 0.0 77.0
MANPOWER LOSSES PER YR O. 0. 43.4	MANPOWER LOSSES PER YR 0. 0. 93.3 13.4	MANPOWER LOSSES FER YR 0. 0. 155.2 25.2	MANPOWER 105555 PER YR 0. 0. 144.2 31.8
PERSONNEL TO BE IRAINED PER YR. 65.5 52.0 43.4 34.2	PERSONNEL TO BE 1RAINED PER YR 122.1 106.6 93.3	PERSONNEL TO BE 18A1NED PER YR. 222.0 178.6 155.2 118.8	PERSONNEL TO BE IKAINED PER YE. 189.1 160.3 144.2
TTHS ADJUSTED O. 0. 0. 36.4	TTHS ADJUSTED ANNPOWER 0. 0. 0. 61.4 20.7	TTHS ADJUSTED HANFOWER O. O. 119.7	TTHS ADJUSTED MANYCHER
UNADJUSTED MARPOWER. 0.0.0	UNADJUSTED WANFOWER 0.0.0 20.0	UNADJUSTED UNADJUSTED O. O. O. O. J.15. O. 35. O.	UNADJUSTED MANYCHER 0. 0. 100.0
7-1300MEL SELSE SECENTS 32.3 25.1 36.4 85.5	RECRUITS PER YEAR = PERSONNEL UE REQUIREMENTS 59.6 48.9 61.4 102.7	RECRUITS PER YEAR = PERSONNEL IS 157.2 75.2 75.2 119.7 119.7	RECRUITS PER YEAR = PERSONNEL DE REQUIREMENIS 53.6 68.0 103.0
40 40 40 40 40 40 40 40 40 40 40 40 40 4	MOS = 635 RECR <u>PAYGRADE</u> E-1 E-3 E-3 E-4	MOS = 63W RECR PAYORADE E-2 E-3 E-3	MOS = 63Y RECRI PAYGRADE E-1 E-2 E-3 E-4

Table D2-2. System: Wheel Reference.

1	PAYGRADE REQUIREMENTS	MANGOMER	MANEGMER	PERSONNEL TO BE IRAINED PER IE.	LOSSES L'ER YR	LOSSES PER YR
ះបាកាញាកា 1 1 1 3 4 1 1	49.44.00 49.44.00 49.44.00	00000 38000 38000 80000	0. 0. 1.66.3 377.3 1270.6	905.5 649.3 838.9 178.1 178.0	1282 1786.0 1786.0 1786.0 14.0	9 40 81 3 4 40 81 3 4 4 6 6 8 8 8 6 6 6 8 8 8 6 6 6 8
MOS * AS1 RE PAYGRADE E-1 E-3 E-3	RECRUITS PER YEAR PERSONNEL DE REQUIREMENTS 168.8 104.4 156.9	UNADJUSTED BE MANPOWER. 0.0.0	TTHS ADJUSTED OF 0.0.0.156.9	PERSONNEL TO BE IRAINED PER YR. 307.9 220.8	MANPOWER LOSSES PER YB G. 0. 183.3	OVERHEAD LOSSES PER YR 307.9 220.8
MOS = 27B RE PAYGRAME E = 1 E = 3 E = 4 E = 4	RECRUITS PER YEAR PERSONNEL LE REGUIREMENIS 48.5 40.2 40.2	UNADJUSTED UNADJUSTED O.	TTHS ADJUSTED MANPOWER 0.000.0000000000000000000000000000000	PERSONNEL TO BE IRAINED PER YR. 96.5 60.2 69.7 59.4	MANPOWER LOSSES PER YR 0. 0. 30.6	OVERHEAD LOSSES PER YR 96.3 60.7 28.8
MOS = 31E RE PAYORAUE E-1 E-3 E-3 E-5	RECRUITS PER YEAR PERSONNEL PERSONNEL BEQUIREMENIS 44.3 44.3 59.7 79.7	. 109.3 UNADJUSTED .MANNEUMER. 0. 0. 0. 75.0	TTHS ADJUSTED O. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.	PERSONNEL TO BE IRAINED PER YR 109.3 78.4 63.5	MANPOWER LOSSES_PER_YB O. O. O. S4.2	OVERHEAD 108.3 78.4 63.5 8.6

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(Con't.) Table D2-2.

MUS = 31V RECI	RECRUITS PER YEAR =	219.6				
PAYGRADE	Personnel Requirements	UNADJUSTED MANESCHER	TTHS ADJUSTED	PERSONNEL TO BE TRAINED PER YR.	MANPOWER LOSSES PER VR	OVERHEAD LOSSES PER YR
제 작 때 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	2008 2008 2009 2009	2000	1280.0 6.0 4.	8.44. 8.44. 8.5		
MOS 1 3SE RECR	RECRUITS PER YEAR =	126.3				
PAYGRADE	Personnel Reguirements	UNADJUSTED MANEQUIER	TTHS ADJUSTED	PERSONNEL TO BE TRAINEL PER YR	MANPOWER YR	OVERHEAD LOSSUS PER YR
m m m m 1 1 1 1 ~ 네 나 쇼	7.4.7.4.6.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.	0000	27 7 00. 21.06. 34.06.	126.3 103.8 95.9 82.1	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	7
MOS = 35H RECR	PECRUITS PER YEAR #	7.1				
PAYCHADE	PERSONNEL REQUIETMENTS	UNABJUSTED	THS ADJUSTED	PERSONNEL TO BE INDINED PER YR	MANPOWER LOSSES PER YR	OVERMEAD VR
의 한 의 대 1 1 1 1 내 네 의 속	જા ર નથ જો જે ਵੱਡો	့ ဝဝဝဘ်	့ ဝင်ငံကိ	્વશ્ ⊶ લઘ	8	1
MOA # 52C RECRE	RECRUITS PER YEAR	63.2				
PAYORADE	PERSONNEL REGUIREMENTS	UNADJUSTED MANPOWER	THS ADJUSTED MANEONER	PERSONNEL TO BE IRAINED PER YR.	MANPOWER LOSSES PER YR	OVERHEAD Losses reb_yb
(작가 약. (작가 약. (작가 당 및 및	કલકુ જુજું જું જુલક્ષ	၀၀ ရှိ ၀၀ ၀၀	္ ဇန္ ဇနာ	ଖଣ ୦ ୬ ଅଟି ୬ ଅଟି ଅଟି ଅଟି	ဇ <i>ာ</i> ဝင်တွင်	88.5 6.8.5 6.8.5 6.8.5 6.8.5 7.8.5 8.5

Table D2-2. (Con't.)

OVERHEAD LOSSES PER YR 15.1 12.4	OVERHEAD LOSSES PER YR 36.6 30.0 0.0	OVERHEAD LOSSES PER VR 56.1 44.6 0.0 27.3	OVERHEAD LOSSES PER YR 101.8 88.8 0.0
MANPOWER LOSSES PER YR 0. 0. 10.9	MANPOWER LOSSES PER YR 0. 0. 24.5 4.1	MANPOWER LOSSES PER YR 0. 0. 37.2	MANPOWER LOSSES PER YR 0. 0. 77.7
PERSONNEL TO BE TRAINED PER YR 15.1 12.4 10.9	PERSONNEL TO BE <u>IRAINED PER YR</u> 36.6 30.0 24.5 18.8	PERSONNEL TO BE IRAINED PER YR 56.1 44.6 37.2 29.3	PERSONNEL TO BE IRAINED PER YR 101.8 88.8 77.8 55.4
TTHS ADJUSTED MANPOWER 0. 0. 10.5	TTHS ADJUSTED MANYOWER	TTHS ADJUSTED MANPOWER 0. 0. 31.2 5.2	TTHS ADJUSTED MANFOWER 0. 0. 51.2
UNADJUSTED MANPOWER 0. 0. 10.0	36.6 UNADJUSTED MANPOWER 0. 0. 20.0 5.0	56.1 UNADJUSTED MANPOMER 0. 0. 30.0 5.0	101.7 UNADJUSTED MANPOWER 0 0 50.0 20.0
RECRUITS PER VEAR = PERSONNEL DE REQUIREMENTS 8.0 6.4 10.5	RECRUITS PER YEAR = PERSONNEL 10.8 14.7 20.9 24.0	RECRUITS PEK YEAR = PERSONNEL DE REQUIREMENTS 27.7 21.5 31.2 73.3	RECRUITS PER YEAR = PERSONNEL DE REQUIREMENTS 49.7 40.8 51.2 85.6
MOS = 54E RECRU <u>PAYGRADE</u> E-1 E-2 E-3	MOS = 63G RECRI PAYGRADE E-1 E-2 E-3 E-4	MOS :: 63.1 RECRI <u>PAYGRADE</u> E-1 E-2 E-3 E-4	MOS = 63S RECR <u>PAYGRADE</u> E-1 E-2 E-3 E-3
Σ	2	.	•

Table D2-2. (Con't.)

	OVERHEAD LOSSES PER YR	386.0 310.6 0.0 170.6
	MANPOWER LOSSES PER YR	0. 0. 269.8 35.9
	PERSONMEL TO BE IRAINED PER YR	786.0 310.6 269.8 206.5
	TTHS ADJUSTED MANPOWER	0. 0. 208.2 51.9
386.0	UNADJUSTED	200°. 500°.
RECRUITS PER YEAR *	PERSONNEL REQUIREMENTS	273.4 137.7 208.2 298.5
MOS = 63W RECF	PAYGRADE	E-1 E-3 4-4

Table D2-3. System: I Lance.

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OVERHEAD OVERHEAD OVERHEAD OVERHEAD OVERHEAD OVERHEAD OVERHEAD OVERHEAD OVERHEAD A3.9 O.0 33.9 O.0 A3.9 O.0 O.0 O.0 O.0 O.0 O.0 O.0 O	A THE STREET STREET STREET STREET STREET
MANPOWER MANPOWER LOSSES PER YR 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	pa-infinithing,
PERSONNEL TO BE TRAINED PER YR 538.9 417.1 178.0 89.0 89.0 115.8 96.2 82.5 71.3 40.9 TRAINED PER YR 115.8 96.2 82.5 71.3 40.9	AND AND AND ADDRESS OF THE PARTY AND ADDRESS O
TTHS ADJUSTED O. 0. 376.6 377.3 370.8 184.9 156.9 156.9 156.9 156.9 0. 0. 0. 0. 0. 0. 0. 0. 31.9 31.9	ese muselements, p. 1 mis, gills
905.5 UNADJUSTED #ANPOWER 0. 360.0 360.0 360.0 180.0 115.8 UNADJUSTED #ANPOWER 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0	1
RECRUITS PER YEAR = PERSONNEL 496.4 306.9 461.4 664.1 306.9 461.4 664.1 304.8 370.8 370.8 104.4 156.9 104.4 156.9 108.7 62.3 108.7 62.3 17.8 EGUITEMENTS 58.2 108.7 62.3 17.8 20.8 32.0 32.0	indicates and supplementations and supplementations and supplementations and supplementations and supplementations are supplementations are supplementations and supplementations are supplementations are supplementations and supplementations are supplementations are supplementations are supplementations are supplementations are supplementations are supplementations and supplementations are supplementations
MOS = 15XX RECR E-2 E-3 E-4 E-3 E-5 E-3 E-2 E-3 E-2 E-3 E-3 E-3 E-3 E-3 E-3 E-3 E-3	The state of the s
D-18	į

Table D2-3. (Con't.)

OVERHEAD LOSSES PER YR	8.0 7.0 0.0		OVERHEAD LOSSES PER YR	91.5 68.5 0.0		LOSSES PER YR	20.7		OVERHEAD LOSSES PER YR	0.00	
MANPOWER LOSSES PER YR	000 4		MANPOWER LOSSES PER YR	0. 0. 59.7		LOSSES PER YR	19.2		MANPOWER LOSSES PER YE		
PERSONNEL TO BE IRAINED PER YR	0.8 0.7 0.8 8.4		PERSONNEL TO BE TRAINED PER YR	91.55 68.55 59.7		TRAINED PER YR	200.7 200.7 200.7		PERSONNEL TO BE IRAINED PER YR	7.00.4 1.4.0.0	
TTHS ADJUSTED	်ဝ်ဝဲ ပုံ (၁၀)		TTHS ADJUSTED MANPOWER	0. 53.5	TTHS ADJUSTED	MANPOWER	16.7		TTHS ADJUSTED MANPOWER	့် ဝီဝီဝီက်	
8.0 UNADJUSTED	် ၁၀၀၈	91.5	UNADJUSTED	.000	25.2 UNADJUSTED	MANPOWER	15.0	7.1	UNADJUSTED		
RECRUITS PER YEAR = PERSONNEL DE REQUIREMENTS	24 4 82 04 4 4	RECRUITS PER YEAR =	PERSONNEL REQUIREMENTS	53.8 53.7 53.5	RECRUITS PER YEAR = PERSONNEL	REQUIREMENTS	15.7	RECRUITS PER YEAR =	PERSONNEL REGUIREMENTS	ພພູຊູໝ ລຸຊ ⇔ລ	
MOS = 31S RECRI PAYGRADE	П. С.	MOS = 31V RECR	PAYGRADE	п п – 1 3 3	MOS = 35E RECRU	PAYGRADE E~1	1 H D	MUC = 35H RECRU	PAYGRADE	тт п 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	

Table D2-3. (Con't.)

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195.0 0. 143.3 0. 195.0 0. 143.3 195.3 195.5	PAYGRADE	PERSONNEL DE REGIMERENTIS	UNADJUSTED	TTHS ADJUSTED	PERSONNEL TO BE IRAINED PER YR	MANPOWER LOSSES PER YR	OVERHEAD LOSSES PER YR	
CRUITS PER YEAR = 15.1 FERSONNEL TO BE MANPOWER MANPOWER THIS ADJUSTED FERSONNEL TO BE MANPOWER WANDOWER MANPOWER THIS ADJUSTED THIS ADJUSTED FER YR 10.5 10.5 10.0 10.5 10.5 10.0 10.9 10.5 10.0 10.9 10.5 10.9 10.9 10.5 10.9 10.9 10.5 10.9 10.9 1	를 (1884) - 기기기기	108.5 64.9 104.3 209.5	0. 100.0 15.0	0 0 0.404 2.20	185.0 143.3 124.3	0. 0. 124.3 7.5	185.0 143.3 0.0 93.9	
FERSONNEL UNADJUSTED THIS ADJUSTED PERSONNEL TO BE HANPOHER	RECR		15.1					
10.5 10.5	GRADE	PERSOWNEL REQUIREMENTS	UNADJUSTED	TTHS ADJUSTED MANFOWER	PERSONNEL TO BE TRAINED PER YR	MANPOWER LOSSES PER YR	OVERHEAD LOSSES PER YR	
PERSONNEL UNADJUSTED THIS ADJUSTED PERSONNEL TO BE MANPOWER LOSSES PER YR LOSSES	H OLD	0 4 0 0 4 10	.00	0 0 0 10 0 0	15.1 12.4 10.9	10.9	15.1	
PERSONNEL UNADJUSTED TTHS ADJUSTED TTHS ADJUSTED TTHS ADJUSTED TTHS ADJUSTED PERSONNEL TO BE TO B			. 6					
S.0 0. 0. 0. 0. 7.5 0. 0. S.2 S.0 0. 0. 0. 0. S.2 S.2 S.2 6.1 6.1 CRUITS PER YEAR = 186.3 186.3 186.3 PERSONNEL UNADJUSTED TTHS ADJUSTED PERSONNEL TO BE MANPOWER LOSSES PER YR LOSSES PER	GRADE.	PERSONNEL REQUIREMENTS	UNADJUSTED	TTHS ADJUSTED MANFOWER	PERSONNEL TO BE IRAINED PER YR		OVERHEAD LOSSES PER YR	
CRUITS PER YEAR PERSONNEL UNADJUSTED TTHS ADJUSTED PERSONNEL TO BE MANPOWER OVER TRAINED FER YR LOSSES PER YR<	로 (제한) 	94.9 07.0	့် ဝဝ က်	်ဝံက် လ	91.49 G 10.41	6.0 6.1	0.7.5 0.08	
PERSONNEL UNADJUSTED TTHS ADJUSTED PERSONNEL TO BE MANPOWER OVER TRAINED FER YR LOSSES PER Y	RECRI		186.3					
90.6 0. 0. 186.3 0. 71.1 0. 0. 0. 158.1 0. 94.4 90.0 94.4 128.8 128.8 93.2 15.0 15.8 15.1	GRADE	PERSONNEL REQUIREMENTS	UNADJUSTED	TTHS ADJUSTED MANPOWER	PERSONNEL TO BE IRAINED FER YR		OVERHEAD LOSSES PER YR	
	(4 15 숙 	90.6 71.1 94.4 93.2	90.0 15.0	0 6 8 11 4 4 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	186.3 158.1 128.8 89.5	0. 128.8 15.1	186.3 158.1 0.0 74.4	

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Table D2-3. (Con't.)

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	ER YR	٠. ٠	0.0	4			AD ER YR	₹.	0.0	٥.		AD ER YR	9.	4.	Šα		AD ER YR	ıç -	o.4.
OVERHEAD	LOSSES PER	121.6	0	59.4			OVERHEAD LOSSES PER	81.4	71.1	30.9		OVERHEAD LOSSES PER	231.6	186.4	98.86 8.86		OVERHEAD LOSSES PER	94.5	0.0 46.4
	LOSSES PER YR	<i>•</i> •	30.6	4.1			MANPOWER LOSSES PER YR	.	62.2	13.4		MANPOWER LOSSES PER YR	ó	· ·	25.2		MANPOWER LOSSES PER YR	••	72.1
PERSONNEL TO BE	TRAINED PER YR	121.6	9.08	63.5			PERSONNEL TO BE IRAINED PER YR	81.4	71.1 62.2	44.4		PERSONNEL TO BE TRAINED PER YR	231.6	186.4	101.4		PERSONNEL TO BE IRAINED PER YR	94.5	72.1
TTHS ADJUSTED	MANPOWER	óó	67.6	10.3			TTHS ADJUSTED HANPOWER	ò	0. 40.9	20.7		TTHS ADJUSTED MANPOWER	ò	• 0	36.4		TTHS ADJUSTED MANPOWER	00	10.10
121.6 UNADJUSTED	MANPOWER	o d	65.0	10.0		81.4	UNADJUSTED	ò	• • • • •	20.0	231.6	UNADJUSTED	ċ	0	35.0	94.B	UNADJUSTED	000	000
RECRUITS PER YEAR ** PERSONNEL	REGUIREMENTS	60.1 46.5	67.6	158.8		RECRUITS PER YEAR =	Personnel Requirements	39.7	32.6 40.9	4.89	RECRUITS PER YEAR =	PERSONNEL REQUIREMENTS	164.0	82.6	174.7	RECRUITS PET YEAR *	Personnel Reguirements	9.46.8 9.4.0	71.2
MOS = 63J RECI	PAYGRADE	E-1 E-2	E-3	E-4		MOS = 63S RECT	PAYGRADE	ij	e m	E-4	MOS = 63W RECF	PAYGRADE	E-1	С.	n n n	MOS = 63Y RECI	PAYGRADE		1페 1 1

Table D2-4. System: MLIS.

	ori			œl		52A			ŭĽΙ		
	OVERHEAD LOSSES PER YR	905.8 649.3 319.0 180.1 0.0 35.0 45.1 21.4	מאנטמומיס	LOSSES PER YR 205.3 147.2		OVERHEAD LOSSES REK. YK	6.0 6.0 6.0 6.0		OVERHEAD LOSSES PER YR	37.6 27.0 21.9 0.6 0.0 0.0 gentre g	
	MANPOWER LOSSES PER YR	212 234 24 24 25 20 20 20 20 20 20 20		LOSSES FER YR 0. 0. 122.2		nanpower Losses, per. Yr			MANPOWER LOSSES, PER YR	0. 0. 0. 18.1 %.8	
	PERSONNEL TO BE IRAINED PER YR.	905.5 649.3 538.9 417.1 178.0 89.0 45.1 0.		TERSONNEL TO BE TRAINED PER YR 205.3 147.2 122.2		PERSONNEL TO BE IRAINED PER YR.	200 44 201 201 201 201 201 201 201 201 201 201		PERSONNEL TO BE IRAINED PEK YK.	37.6 27.0 21.0 2.18.0 2.8.0 3.8.0	
	11HS AUCUSTED MANPOWER	0. 0. 188.3 377.3 370.8 184.9 0.		MANPOWER 0. 0. 104.6		TTHS ADJUSTED	0.000 20.000 3.1.1		TTHS ADJUSTED MANFUWER.	00. 00. 00. 00. 00. 00. 00.	
\$05.5	UNADJUSTED MANPOWER	180.0 380.0 380.0 180.0	205.3	MANFOWER 0. 100.0	8. 9.	UNADJUSTED LIANEGMER	၁ဝ ဒီဒီဒီတို့တို့	37.6	UNADJUSTED MANFOWER		
RECRUITS PER YEAR =	PERSONNEL REQUIREMENTS	49% 30% 4661.4 30% 1.4% 8.6 0.0	RECRUITS PER YEAR =	REGUIKEMENTS 112,6 69.5	RECRUITS PER YEAR =	Personnel Resulbenes	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	RECRUITS PER: YEAK ==	PERSONNEL Requirents	19.1 15.2 17.9 27.4 27.4 31.4	
MUS = 15XX RECR	PAYGRADE	ጣጣ ፑብጣ ዓጣጣጣ 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	MOS - ASI RECR	<u>FAYGRAUE</u> E-1 E-2 E-3	HUS = 27B RECK	PANGRADE	пппп - - - - - - - - - - - - - - - - -	MOS = 7.1E RECR	LAYGRADE	E-1 6-2 6-3 E-4 E-4 E-1	1.0
				D-22	2						

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Table D2-4. (Con't.)

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	1035E3 PER 7R	ງ ໄດ້ ເວັນ ວ		OVERHEAD LOSSES PER YR	91.5 68.5 0.0			OVERHEAD LOSSES PER YR	25.3 20.7 0.0	OVERHEAD	LOSSES PER YR	. ୧୯୦ . ଅପ୍ତ	
MANPOWER	LOSSES PEK YR			; `, 7 5 <u>507</u>	59.7			MANPOWER LOSSES PER YK	0. 19.2 2.2		LUSSES PER YR	m ocoé	
PERSCNNEL TO BE	TRAINED PER YR	≎.v.4. ⊙⊙≈.a.		PERSONNEL 15 TRAINED PER Y	91.5 68.5 59.7			PERSONNEL TO BE TRAINED PER YR.	25.3 20.7 19.2		TEKSUNNEL TO BE TRAINED PER YR	7004 4404	
TTHS ADJUSTED	MANFOLIER			TTH'S ADJUSTED NENPOWER	0. 0. 53.5			TTHS ADJUSTED MANPOWER	0. 0. 15.7	1	TTHS ADJUSTED MANPOWER	ဝင်ဝင်က်	
8.0 UNADJUSTED	MANPOWER	0000	91.5	MANPOWER	.0°.0°.0°.0°.0°.0°.0°.0°.0°.0°.0°.0°.0°.		25.2	UNADUUS TEN MANPOWER	0. 0. 15.0	7.1	UNADOUSTER		
RECRUITS FER YEAR = FERSONNEL	KEOUT! EMENIS	ኤፍፋኒ කፋኤஃ	RECRUITS PER YEAR "	PERSONNEL REQUIREMENTS	53.8 33.7 53.5		RECRUITS PER YEAR =	PERSONNEL REQUIREMENTS	14.2 9.8 15.7	RECRUITS PER YEAR =	PERSONNEL REGUIREMENTS	મું મુખ્યું જિમ્મુઝ	
MOS = 315 RECRI	<u>PAYORADE</u>	리지미리 1 1 1 1 1 1 1 4 4 4 4 4 4 4 4 4 4 4 4 4	MÖS = 31V RECRI	PAYUKADE	- 프 크 크 	D 22	MUS = 35E RECR	PAYGRADE	100 111 100 100	MOS = 35H RECR	<u> PAYGRAUE</u>	표 대표	

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113.0 20.0 44.6

113.9 46.6 78.7 54.7

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Table D2-4. (Con't.)

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0VERHEAD LOSSES PER YR 65.5 52.0 0.0	30.1 OVERHEAD	LOSSES PER 101.8 88.9 0.0 42.0	OVERHEAD LOSSES PER 183.4 147.5 0.0 87.3	OVERHEAD LOSSES FER 37.8 32.1 0.0
MANPOWER LOSSES PER YR O. O.	4.1 MANPOWER	LOSSES. PER. YII. 0. 0. 77.7 13.4	MANPOWER LOSSES PER YR 0. 0. 128.2 10.8	MANPOWER LOSSES. PER YR 0. 0. 28.8 7.9
PERSONNEL TO BE TRAINED PER YR. 65.5 52.0	34.2 34.2 PERSONIGE TO BE	161.8 101.8 88.8 77.8 55.4	PERSONNEL TO BE TRAINED PER YR 183.4 147.5 128.2 98.1	PERSONNEL TO BE TRAINED PEK YK 37.8 32.1 28.8 21.8
TTHS ADJUSTED MANYOWER O. O.	10.3 10.3 11HS ADJUSTED		TINS ADJUSTED MANPOWER 0. 0. 98.9 15.6	TTHS ADJUSTED MANPOWER 0. 20.6 10.4
65.5 UNADJUSTED MANYOWER 0.0	10.0 10.0 101.7	0.00 50.0 20.0	183.3 UNADJUSTED MANPOWER 0. 0. 95.0 15.0	37.8 UNADJUSTED MANPOWER 0. 0. 20.0
RECRUITS PER YEAR = PERSONNEL <u>UE MEQUIREMENIS</u> 32.3 25.1	36.4 85.5 RECRUITS PER YEAR =	49.7 49.7 40.8 51.2 85.6	RECRUITS PER YEAR = PERSONNEL 129.9 65.4 98.9 141.8	RECRUITS PER YEAR = PERSONNEL LIE REQUIREMENTS 13.6 20.6 20.6 28.5
MUS = 63J RECR <u>PAYGRADE</u> E-1 E-2		<u>Poyukaue</u> E − 1 E − 2 E − 3 E − 4	MOS = 63W RECF <u>PAYGRADE</u> E-1 E-2 E-3 E-3	MUS - 63Y RECT F <u>'AYGKADE</u> E-1 E-3 E-3 E-4

Table D2-5. System: Lance II.

												STORES	
	UVERHEAD LOSSES PER YR	0.5.5 649.3 319.0 180.1 0.0 35.0		OVERHEAD LOSSES PER YR	24e.4 17c.7 0.0		OVERHEAD LOSSES PER YK	୧୯ ଅଧ୍ୟ ୧୯ ଅଧ୍ୟ ୧୯ ଅଧ୍ୟ ୧୯ ଅଧ୍ୟ	0.0		OVERHIEAD LUSSES PER YK	0.25 21.5 25.5 20.1 0.1 0.10	
	MANPOWER LOSSES PER YE	0. 219.9 236.9 176.0		MANPOWER LOSSES PER YR	0. 0. 146.6		MANPOWER LOSSES PER YR	 0.48	34.0		MANFOUER LUSSES <u>FLK YI</u>		
	FERSONNEL TO BE JRAINED FER YK.	905.5 649.3 538.9 417.1 178.0 89.0		PERSONNEL TO BE IRAINED PER YR.	246.4 176.7 146.6		PERSONNEL TO BE IRAINED PER YK.	96.5 80.0 80.0 80.0 80.0	34.0		PERSONNEL 10 BE INAINED PEKIKK.	43.5 41.5 41.7 41.7 41.4 41.4	
	11HS ADJUSTED MANYOWER	0. 0. 188.3 377.3 370.8 184.4		TTHS ADJUSTED MANEGMER	0. 0. 125.5		TTHS ADJUSTED MANFOWER	ာ ဝဝဝ ့	6. 1.0		TTHS ADJUSTED MANFOWER	000 11.8 2.1.8	
8.50%	UNALUISTED MANFUWER	0. 180.0 360.0 100.0	246.3	UNADJUSTED	0. 0. 120.0	96.5	UNADJUSTED	့ ဝဝဝဝ ဂ	0.00	43.8	UNADJUSTED MANIPUMER	00000	
RECRUITS PER YEAR "	PERSUNNEL KEQUIREMENIS	476.4 306.4 461.4 306.8 300.8	RECRUITS PER YEAR =	PERSONNEL <u>Kequikements</u>	130.1 83.5 125.5	RECRUITS PER YEAR =	PERSONNEL REGUTREMENTS	ል ላ መጥ ው መረሳ መቀ	5.10	RECRUITS PER YEAR =	PERSONNEL <u>KROUIKEMENTS</u>	22.3 177.8 30.8 32.0	
MIS - 15XX RELK	P. AYUKADE	ការក្រុកក្ ក្រុកក្រុ ក្រុក្រុ ក្រុកស្ត	MUS " ASI RECR	<u> </u>	리 메리 - -	MUS - 27B RECR	PAYGRADE	птат 1 (1 (1 (1 (1 (1 (1 (1 (1 (1 (۳ ۱ ب	MUS - 31E RECR	<u> PAYUKADE</u>	2 - 1 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 -	

Table D2-5. System: Lance II.

GVERHEAD LÚSSES PER YR	8.00 3.40 1.00 0.00 0.00	COURGAIN	1083ES PER YR 246.4 176.7 0.0		OVERHEAD LOSSES PER YK	አክልል የዕልል የዕልል የሚያ		OVENHEAD LOSSES PER_YR	43.9 31.5 25.3 0.1 0.0
MANFOWER LOSSES PER YR	0 20 20 9 9 9 9 9 9 9 0 0	o de v	LOSSES PER YR 0. 0. 116.6		MANPOWER LUSSE: FER YR			MANFOWER LUSSES ILLK YK	0. 0. 41.7 11.4
PERSONNEL TU BE TRAINED PER YK	905.5 649.3 538.9 417.1 178.0 89.0	Ç	PERSONNEL 10 BE 1801 10 BE 1801 1901		PERSONNEL TO BE <u>IRAINED PER YR.</u>	96.5 80.2 68.7 59.4 34.0		PERSONNEL TO BE IMA <u>inel</u> Pem Im.	\$ 400 \$ 100 \$ 100
THS ADJUSTED MANFOWER.	0. 0. 188.3 377.3 370.8		MANYOWER O. 0. 0. 125.5		TTHS ADJUSTED MANPOWER	0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		TTHS ARJUSTED MANITUMER	00018 200
WADJUSTED	0. 180.0 360.0 180.0	246. W	UNABJUSTED MANYCIMER 0. 120.0	٠ ن	UNADJUSTED MANFIUMER	၁၀ ၀၀၀၀၄၄ ၀၀၀	4 ኢ መ	UNABLIUSTED MANITUMER.	0 c o o o o
RECHUITS PER YLAK PERSUNNEL PERSUNNEL	4%6.4 306.4 461.4 664.1 370.8	RECRUITS PER YEAR ::	PERSONNEL HEQUINEMENTS 135.1 83.5 125.5	RECRUITS PER YEAR =	PERSONNEL REGUTRENENTS	8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	RECRUITS PER YEAR =	PERSONNEL REQUINEMENTS	20.3 17.8 20.8 32.0 4.3
MUS - 15XX KELRA <u>YAYAYADE</u>	মামামাম্বাম 1 4 1 ; ; = আভা 4 টা হ	MUS ASI RECR	<u> </u>	MUS - 27B RECRI	PAYCHAUE	재미미미미 1 1 1 : □ 기보수간	MUS - 31E RECR	FAYDKADE	1 - 3
			D.	-2n					

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UVLRNE AU LUSSES, <u>PER, Y</u> K	5 - 8 - 6 		OVERLIEAD LUSSES PER YN 91.5	0.0		OVERHEAD LOSSES PER YN	25.3 20.7 0.0		OVERHEAD LUSSES PER YE	. 6.00
MANPOWER LOSSES FEB. YB	;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;		MANPOWER LUSSES PER YR O.	7.75		MANFOWER LOSSES PER YR	٥. 0. 19.٤		MANPOWER LUSSES FER YR	. m
PERSONNEL TO BE 1801NLP EMENYE	37. v. 4.		PERSONNEL TO BE IRAINED PEK YK. 91.5	59.7		PERSONNEL TO BE IRAINEDPER.YK.	25.3 20.7 19.2		PERSONNEL TO BE IMMINELLIEK.YK.	4 v 6 . 1 4 v 6 . 1
THS ALUGALIC MANITUMEN	် ဝဝ တ်က်		TTHS ADJUSTED MANYOWER 0.			TTHS ADJUSTED MANEUMER	0. 0. 15.7		THS ADJUSTED MANYOWER	ာ ဇာဇ်တ် <i>က်</i>
8.0 UNADOUSTED	; ;;;;	8. 8.	UNADJUSTED MANEGUER.	o.06	25.2	UNADJUSTED			UNADJUSTED MANIFOWER.	
RECRUITS PER YEAR = PERSONNEL IN NEWLINEMENTS	344V 344A	RECRUITS PER YEAR =	PERSONNEL RECOURTEMENTS 53.8	s: :: ::	RECRUITS PER YEAR =	PERSONNEL KEQUIREMENTS	14.2 9.8 15.7	REFERENCE PER VEAR B		มุนุษุญ จุษาภ
MUS - 31S REUN PAYMANE	मन्त्रम् स्तुस्त् चिश्रस्	MÚS = 31V RECRI	E-1	គេ : ដ	MUS = 35E RECR	TAXANA C	1 N M	9.180 19.180 19.180 19.180 19.180 19.180	FAVUKA	пп пп 1 1 - 1 1 1 4 4

Table D2-5. (Con't.)

OVERNEAD LUSSES_PER YR 111.0 80.0 0.0 53.3	оvекивар <u>1955</u> <u>68. YR</u> 15.1 12.4 0.0	OVERHEAD LOSSES. PER YR 18.3 15.0 0.0	оvекнелр LOSSES_PER. XII 74.3 0.0
MANPOWER LOSSES PLE.YE LS 0. 74.0 7.5	MANPOWER 1.0334.5_PER_YR 1. 0. 10.9	MANPOWER LOSSES FEB. YR U 0. 0. 12.2	MANPOWER LOSSES ERR YR O. O. 62.0
PERSONNEL TO BE IRAINLA FLAS YIS 111.0 26.0 74.6 60.8	PERSONNEL TO BE 1RAINED PEK. YK 15.1 12.4 10.9	PERSONNEL TO BE 1RAINEL PAB_YK_ 18.3 15.0 12.3	PERSONNEL TO BE 11861NED PEK YK. *3.5 /4.3 *2.0 48.9
17HS AD-JUSTED MANN- <u>GBN-R</u> 0. 63.6 18.8	TTHS ADJUSTED MANEUMER O. 0. 0. 10.5	TTHS ADJUSTED HANFONER O. 0. 0. 0. 5	11MS ADJUSTED
111.0 UNAD JUSTED MANYCHIEK. 0. 60.0	15.1 UNADJUSTED MANITOMER 0. 0. 10.0	18.3 UNADJUSTED MANEQHER. 0. 0. 10.0	93.5 UNADJUSTED MANPSHEK 0.0 50.0 10.0
RECRUITS FER YEAR = PERSONNEL GENTLE HEGHLINEMLNIS 30.9 30.9 62.6 125.7	RECRUITS PER YEAR " PERSONNEL LIE KEGIUIKERENIS 8.0 6.4 10.5	RECRUITS PER YEAR " PERSONNEL LE (MEGUINEMENIS 7.9 7.4 10.5	RECRUITS PER YEAR # PERSONNEL ALL MEGALIMEMIS 35.8 35.8 122.2
M13 - 5.14 RECRU PAYUMAUE E-1 E-3 E-3 E-4	NIJS - 54E RECRU <u>PAYORANE</u> L-1 L-3	.1115 - 636 RECRI <u>PAYGKADE</u> E-1 E-2 E-3	MUS = 0.3J RECR ピカソンがAUL ヒー3 モー3 モー4

Table D2-5. (Con't.)

OVERHEAD	OVERHEAD
LOSSES PER YR	LOSSES PER YR
203.5	270.2
177.7	217.4
0.0	0.0
MANPOWER LOSSES PER YR 0. 155.5 26.8	MANPOWER <u>LOSSES PER YR</u> 0. 0. 188.9 28.8
PERSONNEL TO BE	PERSUNNEL TO BE
<u>IRAINED PER YR</u>	TRAINED PER YR
203.5	270.2
177.7	217.4
155.5	188.9
110.9	144.6
TTHS ADJUSTED MANPOWER 0. 0. 102.3 41.4	TTHS ADJUSTED MANPOWER 0. 0. 0. 145.7
203.5	270.2
UNADJUSTED	UNADJUSTED
MANFUWER	MANPOWER
0.	0.
0.	0.
100.0	140.0
RECRUITS FER YEAR = PERSONNEL UE REQUIREMENTS 99.4 81.5 102.3 171.1	RECRUITS PER YEAR = PERSONNEL DE REQUIREMENTS 191.4 96.4 145.7 208.9
MUS - 6.35 RECR	MUS + 63W RECR
<u>PAYOHAUE</u>	<u>FAYGRADE</u>
E-1	E-1
E-3	E-3
E-3	E-3
E-4	E-4

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APPENDIX E

IMPACT ANALYSIS

Appendix El contains the Availability Ratio (AR) results categorized by system, MOS and paygrade. Section 7 displayed the results in summary form (MOS totals) and indicated the percentage change in availability CSWS placed upon MOS manpower. This section indicates shortfalls or surpluses by MOS/faygradc within each CSWS system but does not indicate percentage changes by MOS/paygrades between Current FY-83 Availability Ratios (Table El-3) and CSWS Availability Ratios (Table El-4 to Table El-7.).

Appendix E2 Personnel Management Impacts contains the "Impact of High Technology Systems on the Army Personnel Management System" by Paul D. Phillips, Brigadier General (U.S. Army - retired). This paper focuses on the concept that incoming personnel are decreasing in quantities and skill while system technology is increasing. It is an inverse function which must be investigated in detail. To have an effective Army, the right face must be in the right place.

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APPENDIX E1
PERSONNEL PESOURCE IMPACTS

Table El-1. Adjusted Availability FY 1983 Projection.

JAHUE	13	4	5	6	7	3	9
MOS							
15/48 37/20 31/20 31/20 31/20 31/30 53/48	1060.290 128.790 465.771 131.360 1502.360 241.152 .68.017 1603.684 .240.975 1663.688 367.650 567.629 1877.064 745.628	954.954 109.782 360.192 106.368 1299.210 158.934 158.726 715.904 338.070 1621.455 333.600 372.237 913.927 565,510	354.144 39.442 546.060 194.910 565.614 14 .424 255.200 251.940 1950.660 216,104 1029.528 298.303 331.960 641.948 363.340	233.240 50.128 239.000 115.000 2064.004 74.340 219.952 129.010 1114.168 0.000 100708 63.600 0.000 0.000	136.220 104.000 0.000 60.264 1017.110 0.000 37.724 0.000 452.556 0.000 767.339 0.000 0.000	8.888 8.888 8.888 8.888 179.938 8.888 8.888 8.888 8.888 8.888 8.888	8.898 8.898 8.898 8.898 8.898 8.898 8.898 8.898 8.898 8.898

Table E1-2. Adjusted Authorizations FY 1983 Projections.

GRADE	1-3	4	5	6	7	8	9
MOS							
15/0/ 31/8 31/9 31/9 35/0 35/0 53/0 63/0 63/0 63/0 63/0 63/0 63/0 63/0 6	\$67.510 140.238 583.968 215.923 1324.800 111.156 181.470 508.539 1290.540 244.755 1799.192 241.300 356.823 1103.687 523.200	937.732 79.929 231.636 101.382 1414.530 209.440 91.036 669.900 621.656 350.435 1333.705 431.040 300.916 799.306 454.930	257.040 68.302 463.672 154.860 422.100 146.172 184.300 271.320 2444.704 158.984 782.100 130.545 579.000 521.823 381.120	300.700	146.923 83.000 0.000 34.992 791.300 0.000 129.176 0.000 626.616 0.000 892.769 0.000 0.000	8.999 9.999 9.999 236.333 9.989 40.366 9.999 9.999 9.999 9.999	9.999 9.999 9.999 9.999 9.999 9.999 9.999 9.999 9.999 9.999

Table E1-3. Availability Ratio. MOS/Paygrade Detail

SYSTEM: CURRENT FY 83 PRCJECTION

	<u>E1-3</u>	E-4	E-5	E-6	E-7	E-8	E-9
15X	1.22	1.02	1.38	0.94	0.93	1.00	1.00
27B	0.92	1.37	0.58	0.78	1.25	1.00	1.00
31E	0.83	1.55	1.18	0.69	1.00	1.00	1.00
31S	0.61	1.05	1.26	1.18	1.72	1.00	1.00
31V	1.13	0.92	1.34	1.01	1.29	0.79	1.00
35E	2.17	0.76	0.97	1.95	1.00	1.00	1.00
35H	1.10	2.06	1.38	1.06	0.68	0.55	1.00
52C	1.51	0.74	0.93	1.55	1.00	1.00	1.00
54E	1.24	1.15	0.76	0.99	0.72	1.00	1.00
63G	0.98	0.96	1.36	1.00	1.00	1.00	1.00
63H	0.92	1.17	1.32	0.97	0.85	1.00	1.00
63J	1.52	0.91	2.29	0.93	1.00	1.00	1.00
63S	1.59	1.24	0.57	1.00	1.00	1.00	1.00
6 3 W	0.98	1.14	1.23	1.00	1.00	1.00	1.00
6 3 Y	1.43	1.24	0.95	1.00	1.00	1.00	1.00

Table E1-4. Availability Ratio. MOS/Paygrade Detail

SYSTEM:	TRACK REFE	RENCE					
15X	E1-3 0.76	$\frac{E-4}{0.74}$	E-5 0.57	E-6 0.59	E-7 0.93	E-8 1.00	E-9 1.00
27B	0.92	0.78	0.30	0.78	1.25	1.00	
31E	0.83	1.16	1.00	0.69	1.00	1.00	1.00
31S	0.61	1.00	1.26	1.18	1.72	1.00	1.00
31V	1.04	.92	1.34	1.01	1.29	0.79	1.00
35E	1.04	0.69	0.97	1.95	1.00	1.00	1.00
35н	1.10	1.95	1.38	1.05	0.68	0.55	1.00
52C	1.29	0.72	0.93	1.55	1.00	1.00	1.00
54E	1.23	1.15	0.76	0.99	0.72	1.00	1.00
63G	0.95	0.96	1.36	1.00	1.00	1.00	1.00
63H	0.85	1.15	1.32	0.97	0.86	1.00	1.00
63J	1.33	0.89	2.29	0.93	1.00	1.00	1.00
63S 63W	1.36	1.16	0.57	1.00	1.00	1.00	1.00
63Y	0.88	1.10	1.23	1.00	1.00	1.00	1.00
0.51	1.20	1.14	0.95	1.00	1.00	1.00	1.00

Table E1-5. Availability Ratio.
MOS/Paygrade Detail

SYSTEM:	WHEEL REFE	ERENCE					
15x	E1-3 0.89	E-4 0.74	E-5 0.57	E-6 0.59	E-7 0.93	E-8 1.00	<u>E-9</u> 1.00
27[0.92	0.88	0.33	0.78	1.25	1.00	1.00
31E	0.83	1.17	1.04	0.69	1.00	1.00	1.00
31S	0.61	1.00	1.26	1.18	1.72	1.00	1.00
31V	1.04	0.92	1.34	1.01	1.29	0.80	1.00
35E	1.30	0.69	0.97	1.95	1.00	1.00	1.00
35Н	1.10	1.95	1.38	1.06	0.68	0.55	1.00
52C	1.39	0.72	0.93	1.55	1.00	1.00	1.00
54E	1.23	1.15	0.76	0.99	0.72	1.00	1.00
63G	0.91	0.95	1.36	1.00	1.00	1.00	1.00
6 3H	0.93	1.17	1.32	0.97	1.00	1.00	1.00
63J	1.36	0.90	2.29	0.93	1.00	1.00	1.00
63S	1.40	1.16	0.57	1.00	1.00	1.00	1.00
6 3W	0.83	1.08	1.23	1.00	1.00	1.00	1.00
63Y	1.43	1.24	0.95	1.00	1.00	1.00	1.00

Table E1-6. Availability Ratio.
MOS/Paygrade Detail

SYSI	rem: 1	LANCE						
15X		E1-3 0.77	$\frac{E-4}{0.74}$	E-5 0.57	<u>E-6</u> 0.59	<u>E-7</u>	$\frac{E-8}{1.00}$	E-9 1.00
27B		0.92	0.81	0.31	0.78	1.25	1.00	1.00
31E		0.83	1.38	1.10	0.69	1.00	1.00	1.00
318		0.61	1.00	1.26	1.18	1.72	1.00	1.00
31V		1.09	0.92	1.34	1.01	1.29	0.79	1.00
35E		1.91	0.76	0.97'	1.95	1.00	1.00	1.00
35H		1.10	1.95	1.38	1.06	0.68	0.55	1.00
52C		1.26	0.72	0.93	1.55	1.00	1.00	1.00
54E		1.23	1.15	0.76	0.99	0.72	1.00	1.00
63G		0.97	0.97	1.36	1.00	1.00	1.00	1.00
6 3H		0.88	1.16	1.32	0.97	0.86	1.00	1.00
63J		1.20	0.89	2.29	0.93	1.00	1.00	1.00
6 3 <i>S</i>		1.43	1.16	0.57	1.00	1.00	1.00	1.00
6 3W		0.88	1.10	1.23	1.00	1.00	1.00	1.00
63Y		1.30	1.22	0.96	1.00	1.00	1.00	1.00

Table E1-7. Availability Ratio.
MOS/Paygrade Detail

SYSTEM:	MLIS						
15x	E1-3 0.92	<u>E-4</u> 0.74	E-5 0.57	E-6 0.59	<u>E-7</u>	E-8 1.00	E-9 1.00
27B	0.92	1.04	0.40	0.78	1.25	1.00	1.00
31E	0.83	1.40	1.11	0.69	1.00	1.00	1.00
31 S	0.61	1.00	1.26	1.13	1.72	1.00	1.00
31V	1.09	0.92	1.34	1.01	1.28	0.79	1.00
35E	1.91	0.76	0.97	1.95	1.00	1.00	1.00
35H	1.09	1.95	1.38	1.05	0.68	0.55	1.00
52C	1.40	9.72	0.93	1.55	1.00	1.00	1.00
54E	1.23	1.15	0.76	0.99	0.72	1.00	1.00
63G	0.97	0.97	1.36	1.00	1.00	1.00	1.00
6 3H	0.90	1.16	1.32	0.97	0.86	1.00	1.00
63J	1.33	0.89	2.29	0.93	1.00	1.00	1.00
63S	1.40	1.16	0.57	1.00	1.00	1.00	1 00

1.23

0.95

1.00

1.00

1.00

1.00

1.00

1.00

1.00

1.00

63W

63Y

0.86

1.37

1.11

1.22

Table E1-8. Availability Ratio.
MOS/Paygrade Detail

SYSTEM:	LANCE II						
15X	<u>E1-3</u> 0.91	$\frac{E-4}{0.74}$	<u>E-5</u> 0.57	E-6 0.60	E-7	<u>E-8</u>	<u>E-9</u>
27B	0.92	0.85	0.33	0.78	0.93	1.00	1.00
31E	0.83	1.38	1.10	0.69	1.00	1.00	1.00
31S	0.61	1.00	1.26	1.18	1.72	1.00	1.00
31V	1.09	.92	1.34	1.01	1.29	0.80	1.00
35E	1.91	0.76	0.97	1.95	1.00	1.00	1.00
35H	1.10	1.95	1.38	1.06	0.68	0.55	1.00
52C	1.35	0.72	0.93	1.55	1.00	1.00	1.00
54 <u>F</u>	1.23	1.15	0.76	0.99	0.72	1.00	1.00
63G	0.95	0.97	1.36	1.00	1.00	1.00	1.00
6 3H	0.93	1.17	1.32	0.97	0.86	1.00	1.00
63J	1.33	0.90	2.29	0.93	1.00	1.00	1.00
63S	1.24	1.09	0.57	1.00	1.30	1.00	1.00
6 3W	0.87	1.09	1.23	1.00	1.00	1.00	1.00
634	1.43	1.24	0.96	1.00	1.00	1.00	1.00

APPENDIX E2
PERSONNEL MANAGEMENT IMPACTS

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IMPACT OF HIGH TECHNOLOGY SYSTEMS
ON THE
ARMY PERSONNEL MANAGEMENT SYSTEM

April, 1982

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IMPACT OF HIGH TECHNOLOGY SYSTEMS ON THE ARMY PERSONNEL MANAGEMENT SYSTEM

EXECUTIVE SUMMARY

From the assessment that follows, one can make the following conclusions as more system specific MOS for low density, high technology systems are added.

- The mission of the personnel management system of putting the right face at the right place at the right time will be more complex, estimates will be more difficult to make and errors are likely to be more frequent and slower to be corrected because there will be a larger number of smaller MOS cells to be managed.
- 2. For the same number of force structure spaces, the Army will need increased end strength and manyears to cover more, smaller, longer and more difficult training courses and higher attrition in those courses. For the same reasons, the Army will need more recruits each year. In a typical case, the

increase would be an 11 percent increase in recruits and a 20 percent increase in trainee end strength and manyears in converting a typical combat MOS (11B) to a typical higher skill MOS (31S), "Field General Communication Security Repairer". Corresponding increases would be in the recruiting force and in the training force.

- 3. To reduce training attrition, the Army will need more and a higher proportion of the brighter population than it has been getting and this will require more and higher enlistment bonuses.
- 4. The career force will be more difficult and more costly to maintain since technologically trained soldiers in both the first term and career force will be in demand in civil life and reenlistment rates will be relatively low, requiring high reenlistment bonus payments.
- 5a. Because the high technology weapon systems are very costly compared to the systems being replaced, the phase-in will be gradual especially to the Reserve Components forcing the Army to train soldiers on two quite different

equipments, using two quite different sets of training programs and trainees over the phase-in period. In event of mobilization, such soldiers will not be interchangeable on equipment designed for the same mission; field artillery fire control equipment is an excellent example for both operators and repairers.

- For the same reason, unless the new systems are issued in a balanced way between CONUS and oversea many MOSs will become inbalanced, locations, seriously complicating the CONUS oversea rotation problem and forcing soldiers to spend a disproportionate time overseas, further reducing reenlistment rates. But, unless the new systems replace the old in a given theater very quickly, the personnel management problem is complicated as in 5a - in that theater; there is a loss of flexibility in personnel assignment on systems designed for the same mission.
- 6. Because of increases in strength, manyears, training and recruiting overhead, and increased bonuses, the Army will cost more for the same number of force structure spaces.

7. To provide reasonable promotion opportunity in the larger number of smaller MOS cells, it will be necessary to increase the richness of the mix of the higher enlisted grades to the lower enlisted grades and within the higher grades for the Army as a whole.

IMPACT OF HIGH TECHNOLOGY SYSTEMS ON THE ARMY PERSONNEL MANAGEMENT SYSTEM

<u>Purpose</u>: To assess the impact on the Army personnel management system of large numbers of system-specific MOS for low density, high technology systems, such as the Corps Support Weapon System.

Scope: We will -

- First, outline in broad terms, the Army personnel management system.
- Second, list the set of changes that will come about by having large numbers of low density, high technology MOS.
- Third, estimate the effect of the more important changes on the personnel management system, quantifying the effect when possible.

ARMY PERSONNEL MANAGEMENT SYSTEM BROAD OUTLINE

- Mission. To put the right <u>face</u> in the right place at the right time, in peace or war.
- Implications. The right <u>face</u> means all of the following: right training, right grade, right skill.

The right place means in an authorized space.

The right time means filling a <u>space</u> that is not already filled and that has remained unfilled for a minimum time, preferably one day.

• Size of Problem; Complexity of Problem.

Size of the Army. The Congress fixes the size of the Army each year through the authorization and appropriations process. The Congress dictates both the manpower end strength and, by specifying the dollars authorized, the manyears or average strength authorized throughout the year.

Theoretically, this size represents a roll-e: of the spaces in all of the units in the Army force structure plus an allowance for trainees, transients, holdees (people awaiting discharge, in the hospital, in prison), and students (TTHS).

Recently authorized Army end strength breaks out about as foliows:

TOTAL	774,000		
OFFICERS	(94,000)		
ENLISTED	(680,000)		
		NR	%
FORCE STRUCTURE SE	PACES	670,000	86.
INDIVIDUALS (TTHS)		104,000	13.
	TOTALS	774,000	100.

TABLE 1

¹ FY83 budget request is for 783,800; 104,707 officers,
674,676 EM, and 4417 cadets.

The problem for the personnel management system is to fill the 670,00 force structure spaces and to keep them filled.

Since the Army always wants a larger force structure than it can afford to man fully, it is willing to man some units at less than full wartime strength and readiness, using the spaces thus freed up to create additional units. The process of determining precisely what spaces in units are to be filled is accomplished through the Army Authorization Document System by the major Army field commanders, each of whom is alloted a portion of the congressional authorized spaces. The end result is the target for the personnel management system, that is, to fill the authorized spaces with people.

Each such space is designated by skill (Military Occupational Specialty) and grade.

o Fill Complexities.

There are about 680,000 enlisted spaces authorized for the active Army of which about half are first term soldiers, (generally E-1 to E-4) and about half are careerists

(generally E-4 to E-9), a careerist being a soldier who has reenlisted at least once.

There are about 360 MOS, making the average cell size (ignoring grade) 1889. But the actual cell size varies widely, from 41 basson players (MOS 02K) to about 56,000 infantry men (MOS 11B). If we consider grade and assume that the average cell has a grade distribution like the Army as a whole, the personnel management problem is complicated by even smaller cells, as shown below.

Table 2. Grade Cells For An "Average" MOS Cell MOS "X" Total Strength 1889.

GRADE	%	NUMBER
- ONADE		NOMBEN
E1-3	33	623
E1-4	27	510
E1-5	18	340
E1-6	12	227
E1-7	7	132
E1-8	2	38
E1-9	<1	19
Ì		
TOTAL	100	1889

The fill problem is further complicated by the fact that over 40% of the Army is overseas and some of the spaces are authorized to be filled by women, on the average, 8%. Taking these factors into account, we have even smaller cells to deal with, viz;

Table 3. MOS "X" Total Strength 1889.

	CONUS (60	%; 1133	OVERSEAS	(40%) 756
	MALE (1042)	FEMALE (91)	MALE (696)	FEMALE (60)
E1-3	344	30	230	20
E1-4	281	25	188	16
£1.5	188	17	125	11
E1-6	125	11	84	7
E1-7	73	6	49	4
E1-8	21	2	14	1
E1-9	10	1	7	1
				
TOTALS*	1042	92	697	60

*TOTALS DO NOT ADD DUE TO ROUNDING

As can be seen, the E-1/E-3 cell of 623 has become 4 nanagement cells varying in size from 20 to 344. And the total number of management cells has increased from 7 to 27 (28 counting the 0 cell) varying in size from 1 to 344.

It is true that not all of the about 360 3 digit alphanumeric MOSs contain all 9 grades (some being "feeder" MOS to "capper" MOS) and that not all MOS are open to women (but over 90% are). Offsetting this reduction in cells to be managed are a number of skill identifiers for the 360 MOSs which increase the number of cells. So we can roughly estimate the cells to be managed at about

360 X 7 grade cells X 2 places X 2 sexes = 10080

Since we have both desirable and undesirable places overseas (accompanied or unaccompanied by dependents) and avoid repetitive assignments to the short tour, undesirable areas, the number of cells could be as many as 15,120 (3/2 x 10,080). Each new MOS added can add 20 to 42 new managment cells. Since a number of low desity MOS will have fewer than 100 spaces authorized and many will have fewer than 500 spaces authorized, the cell sizes will be very small, reducing management flexibility, and especially assignment flexibility, drastically.

Other Complications

Three other problems confront the personnel manager.

The space imbalanced MOS (SIMOS) problem rises when more

than about 55 percent of a skill and grade are in overseas spaces. This means that more than half of a soldier's time will be spent overseas which is not conducive to retention. Unfortunately, this situation occurs most frequently in hard-to-fill MOS (radio/voice intercept; radar fire finder, air defense) normally requiring a high quality soldier. For the Patriot AD missile system, the CONUS/oversea ratio will be about 1:2. For some MOS, it is even worse, running as high as 38 percent overseas for MOS 45T, a specialized turret mechanic.

The important point here is that as we modernize and as we develop higher technology weapons, they tend to be placed overseas both earlier and in greater numbers than in the CONUS, producing at least a temporary and often a permanent SIMOS problem.

The second complicating factor is migration into and out of MOS while in the Army. Until the recent past, the Army has been extremely lenient in permitting such migration, especially to encourage first term reenlistments and thus to maintain authorized total strength. The result has been a rush from the less desirable to the more desirable MOS, seriously complicating the fill problem. In 1982, this migration will cease except into understrength

MOS, a new and welcome management policy possible only because Army non-prior accession requirements are so low and the propensity to reenlist is so high.

The third complicating factor is process made to enlisted men to get them to enlist or reenlist which guarantees them stability at a specified place for a specified time.

Dynamics Of The Personnel Management Problem.

Given an Aimy of relatively constant size as it has been for nearly 10 years, the personnel management problem is to replace losses in trained strength as they occur. This means, of course, accessing new people (recruits) with a long enough lead time to cover training and shipping to the unit which will suffer the trained strength loss. (Prior service people who reenlist after a hiatus in service help reduce the requirement for recruits). Clearly there are many estimates to be made, some of which can be done quite accurately based on history. The more important of these are as follows:

- First term and career reenlistment rates by grade, skill and sex;

- Prior service enlistments by grade & skill;
- Attrition rates by grade, skill & sex before expiration of term of service (ETS);
- Attrition rates in training, both in basic and in AIT (Advanced Individual Training) by course and by sex;
- Rate at which oversea soldiers will extend overseas, by grade and skill;
- Retirement and death rates;
- Migration rates.
- A foreknowledge must be also had of the following:
- Length of training courses by skill (MOS);
- Oversea fill requirements by grade and skill, and
- MOST IMPORTANT, changes in authorized spaces to be filled by grade and skill.

The last will occur under the following circumstances:

- The Army justifies and the Congress approves a change in the Army's force structure and/or size, which can come about for any of the following reasons:
 - .. A phase-down at war's end
 - .. A decrease for budgetary purposes
 - .. An increase preparatory to war
 - .. The addition of a new capability l (new kinds of equipment, new technology, new mission)
 - .. The addition/deletion of an old capability (more tank battalions: fewer artillery battalions)

The new divisional air defense system increases direct support and general support maintenance requirements by 50% and all are system specific mechanics/repairers.

..The removal or trade-off of an old capability (light divisions for heavy divisions; old corps support artillery systems for new)

.. An increase 2/decrease in basic training time

..An $increase^2/decrease$ in course length in AIT or schools

.. Civilianization of military spaces

.. Contracting out for functions performed by military; e.g., messing, maintenance.

A change in force structure with no change in the size of the Army, which will likely

..alter the mix of skills

² For some MOS in the Patriot system, the training requirement is 20 months!! (14 months at the Missile and Munitions School, Huntsville, Alabama: 3 months w/the contractor, and 3 months w/a unit before the MOS is awarded).

..alter the grade mix

..alter the length of training, attrition in training, training course, and hence the TTHS account.

With no change in either size or force structure,
 but

.. A change in grade mix

their alloted spaces differently one year than another, e.g. by substituting in an infantry battalion a mechanic for a company clerk. Or, the same can occur if new organizational or policy requirements are forced on major commanders with no increase in assets, e.g. the requirement for an equal opportunity cell at various organizational levels, or the requirement to "civilianize" certain military spaces to create military spaces for added military requirements in existing units.

All such changes alter the size or makeup of the Army and perpetually change the moving target at which the

personnel manager is shooting. And the extent to which he is surprised by unexpected changes in such things as reenlistment rates, attrition rates, migration rates and recruiting success, will measure the change in speed and direction of the target at which he is shooting i.e., to put the right face at right place at the right time.

Figure 1 below is a simplified version of the dynamics of the enlisted force. The figure applies to all enlisted men and also to any single MOS. From the figure, the following facts may be derived:

- 1. The size of the annual non-prior device (NPS) accession requirement is determined by:
- The ratio of the career to the non-career force size.

The larger the career force and the more stable it is, the smaller the NPS accession requirement. Today, the annual NPS requirement is only about 120,000 and the ratio is about 50:50. At the start of the volunteer Army in 1972, accession requirements were 215,000 and the ratio was about 60 percent non-career to 40 percent careerists.

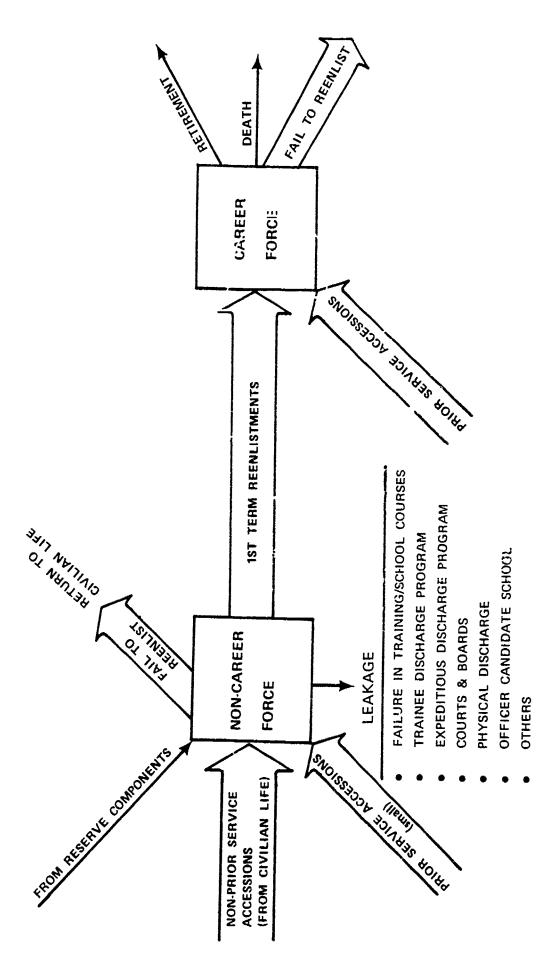


Figure 1. Dynamics of flow, career/non-career forces.

- The average length of terms of service. The longer the average enlistment, the lower the NPS accession requirement.
- The size of the "leakage" from the first term force. The higher the quality of accessions (as measured by educational attainments and by scores made in the various aptitude areas of the entrance battery of tests) the more likely is first term success leading to reduced requirements for NPS accessions, and lowered training costs.
- o The propensity for first term soldiers to reenlist. The greater the propensity, the fewer are the NPS requirements.
- o Losses to the career force. Delayed retirement and high career enlistment rates lead to smaller NPS requirements.
- 2. The relative size of the career force has the following effects:
- o <u>Promotion</u>. The larger the career force, the less opportunity for promotion to the nearly fixed number of E-4 E9 positions.

- o Reenlistment rates. The less opportunity for promotion, the lower the expected career reenlistment rate.
- o <u>Experience/Maturity</u>. The larger the career force, the older, more mature and more experienced the total force.
- personnel costs, due primarily to longevity, but also to dependent allowances and, eventually, retirement.

Summary. The above in broad outline covers the part of the Army personnel management system that deals with matters of recruiting and retention to fill the Army force structure We have said nothing about the promotion system, the retirement system, nor about the myriad systems and procedures - most supported by sophisticated ADP - used to estimate losses, design training programs, training, determine oversea replacement requirements, determine costs, manage the recruit program, etc. Instead, we have tried to outline the major factors that the personnel manager must consider in putting the right face in the right place at the right time and the major complexities he faces.

CHANGES REQUIRED BY LARGE NUMBERS OF LOW-DENSITY, HIGH TECHNOLOGY MOS

We now turn to a list and short discussion of the factors which will be affected as the Army trends toward low density, high technology, system-specific MOS. In general, it can be said that the trend will lead to a larger, more costly Army and to increased complexity for personnel managers.

- Skills will be much more specific and unique, leading to the following:
- More Mosl and hence more and smaller personnel cells to be managed. This could mean many MOS where a soldier could not expect a career pattern leading to E-9 unless specialist ratings are authorized all the way to the top enlisted grades.

As an example, it takes 1 MOS to repair the field artillery FADC computer and counter mortar radar. It takes 10 MOS in maintenance support for the new field artillery fire control system (TACFIRE).

- Longer training courses and hence both of the following: higher TTHS account and shorter time in units; i.e. a lower return on the training investment. Both require increases in Army strength for the same size force structure and both increase costs. In addition, manpower devoted to training will increase.
- More difficult training courses which means higher attrition rates and the need for higher qualifying scores in aptitude areas of the ASVAB (Armed Services Vocational Aptitude Battery). Higher attrition rates mean more recruits are needed, an increase in strength is needed, and costs will increase.
- More and more expensive training courses with fewer students in each, increasing instructorstudent ratio, instructor overhead and cost.
- 2. Trained Army soldiers will be much more in demand by and have far greater opportunities in the civilian encomony, leading to the following:

- career
- o The need for very high bonuses to assure retention
- o The need to increase the "richness" of the grade mix to afford greater promotion opportunity as an aid to retention.
- 3. There will probably be more space imbalanced MOS (SIMOS) as technologically rich units will tend to be overseas in greater number than in CONUS, leading to the need for imaginative new management techniques, such as:
- o Bonuses for extending overseas
- o Free home leaves for extending overseas
- o Promotions for extending overseas
- o Extra time toward retirement for extending overseas.

Note that some of this can be controlled by a properly designed phase-in program - designed in such a way that new equipment is issued in CONUS before going overseas or in a balanced CONUS - overseas issue.

no opportunity for placing a person trained in one MOS in the space of a different MOS.

- Much less opportunity than today for on-the-job training; much more need for school training.
- A need for strict controls on migration out of high technology MOS.
- Because new equipments are so different technologically than those being replaced, so much more expensive, and hence will phase in over a long period of time, the Army is faced in both the active Army and especially in the Reserve Components with the need to recruit, train, assign, replace, promote in short, to manage two quite different sets of people for two quite different sets of equipment designed to do the same task.
- There are likely to be many more critical MOS needing management by exception.

ESTIMATES OF EFFECTS OF CHANGES REQUIRED

Let us now estimate the effects on the Army of the charges outlined above, using some realistic, but not actual data.

Strength & Supportability

Let us consider two MOS, one MOS (A) will be an easy-to-train, dense, non-technological skill; the other (B) will be a system specific, low density, high technolog. Sos. The following data a available:

Table 4. Basic Lata on Two Assumed MOS.

	MC	S
	Α¹	B ²
SPACES IN FORCE STRUCTURE	2000	200
IST TERM ATTRITION IN		
TR 'INING 1%)	15	31
UNIT (%)	11	11
REENLISTMENT RATES		
1ST 1ERM (%)	40	20
CAREER (%)	75	50
LENGTH OF TRAINING (WKS)	12	32
TRANSIENTS, HOLDEE, STUDENT		
(TF'S) (%)	6	6
AVERAGE TERM OF SERVICE (YRS)	3	3
CAREER: NON-CAREER MIX	50:50	50:50

^{&#}x27;SIMILAN TO MOS 118, INT/ !RYMAN.

²SIMILAR TO MOS 31S, FIFLD GENERAL COMSEC REPAIRMAN

Strength Impact - First Term Force

MOS A (Similar to MOS 11B, Infantryman)

- 1st term force will actually consist of 1000 force structure soldiers plus a 6% allowance for THS or 1060.
- lst term force will lose 1/3 of 1060 per year due to expiration of term of service (ETS), or 353.
- In addition, force will lose each year $1/3 \times 118 \times 1060$ due to miscellaneous attrition or 39.
- These 392 trained strength losses must be replaced each year.
- Input to training, however, must account for 15% attrition in training, thus X .15X = 392; X = 461 recruits and 69 losses in training.
- We will assume that losses occur half way through training, or at the 6 weeks point.

 Now, since training takes only 12 weeks, we may compute training manyears as follows:

$$\frac{12}{52} \times 392 + \frac{12}{52} \times \frac{1}{2} \times 69 = 93$$

which represents the average number of trainees in the Army at any one time during the year to turn out 392 trained strength soldiers during the year.

 Total Army strength to support this MOS(A) in the lst term force is:

1158 Total, which is also the number of manyears needed

Total recruits needed is 461

MOS B (Similar to MOS 31S, Field General COMSEC Repairman)

- First term force will consist of 100 force structure spaces plus a 6% allowance for THS or 106 trained people to man the 100 force structure spaces.
- 1st term force will lose 1/3 of 106 per year on average due to ETS or 35.
- In addition, the force will lose 1/3 x 11% x 106 4 per year due to miscellaneous attrition.
- These losses of 39 must be replaced each year.
- Input to training must account for 31% attrition in training; thus X .31X = 39 and X = 59 recruits and 18 losses in training which we will assume occur at mid-point in the training.
- Since training takes 32 weeks, we may compute average trainee strength (or trainee manyears) as follows:

$$\frac{32}{-2} \times 39 + \frac{32}{52} \times \frac{1}{2} \times 18 = 30$$

Total Army strength (and manyears) to support MOSB in the first term force is:

100 in units
6 for THS
30 in training
136 Total

Total recruits needed is 57

We can now compare the two MOS for the first term force,

Table 5. Annual Recruits, Strength, & Manyears Required Per 100 Force Structure Spaces.

	M	os	
	A	В	DIFFERENCE
RECRUITS/100	46	57	11
STRENGTH & MANYEAR			
PER/100	116	136	20

Thus, if 1st term force structure spaces of about 250,000 were to be changed from MOS like A to MOS B, we would need:

$$\frac{250,000}{100}$$
 x 11 = 27,500 more recruits each year

$$\frac{250,000}{x}$$
 $\frac{20}{x}$ = 50,000 increase in Army end strength and manyears (all trainees)

In addition, of course, there would need to be an increase in the recruiting force and in the training force of about 11 and 20 percent respectively.

We may conclude that as MOS change from high density, easy-to-train, low 'echnology to low density, difficult-to-train, high technology:

- Army end strength must increase significantly to accommodate longer course lengths, higher training attrition, and probably lower reenlistment rates.
- Army manyears must increase.
- More recruits will be needed for the same size force structure.

- Manpower costs will increase significantly to pay for more strength and more manyears for the same number of force structure spaces.
- It will be highly cost effective to pay very high bonuses for very high quality enlistees (perhaps only after successful completion of AIT courses) to reduce training attrition.

Supportability Impact - Career Force

Continuing our example with MOS A & B, let us look at the supportability of the career force. (See Table 6 on the following page.)

We may conclude that as MOS change from high density, easy-to-train, low technology to low density, difficult-to-train, high technology:

- The career force will become more difficult to sustain.
- It will be highly cost effective to pay very high reenlistment bonuses both for first term and for career reenlistments.

Table 6. Career Supportability. (Two Assumed MOS)

FORCE STRUCTURE SPACES CAREER SPACES, TRAINED	202	!
FORCE STRUCTURE SPACES CAREER SPACES, TRAINED 1ST TERM SPACES, TRAINED	A	8
CAREER SPACES, TRAINED 1ST TERM SPACES, TRAINED	2000	000
1ST TERM SPACES, TRAINED	1000	200
	0001	100
CAREER FORCES WITHS TO AMERICA	1000	100
1ST TERM COROTS WITHOUT TO THE	1060	106
1ST TERM BEEN: GENERAL STATES	1060	106
1ST TERM FTS I OSSES	40	20
(assuming 3 year enlistment)		
_	353	35
בייייי כי סייייי פייייי	141	7
CARFER RECNIFICATARTAL CONT.	$(.4 \times 353)$	$(.2 \times 35)$
CABEED 100010 0111 TALES (%)	75	. 20
	265	27
(assuming 4 year enlistment)	265	27
CABEED BEENE STATEST	$(\% \times 1060)$	(½ × 106)
CAMEEN REPURENTS	199	14
	$(.75 \times 265)$	(0.5×27)
SUMMARY:		
LOSSES IN CAREER FORCE	266	į
GAINS IN CAREER FORCE	340 (199 + 141)	
Over (+) Short ()	+75	(/ + + + 1)
SUPPORTABILITY	Yes with	
	of 75, allowing Army choice	No, 21% short of need (6/28)

F. 10

Flexibility Impact - Enlisted Force

While it is difficult to cost the increased management complexities of managing added MOS cells, it may be enlightening to look at the extremes.

If all 680,000 enlisted spaces required the same training, i.e., there were only one set of skills and one MOS in the Army, we would have perfect management flexibility. Every trained soldier could be put into any force structure slot (ignoring grade). There would be only one training course, no SIMOS problem, simple recruiting and full assignment flexibility. Shortages would be easily allocated in strict accord with a set of priorities; mistakes in management could be easily overcome.

If all 680,000 spaces were different, we would need 680,000 courses (less THS!), no assignment flexibility, 100% SIMOS problem, and a recruiting nightmare wherein every recruit would have to be signed up and trained for a unique space in a specific unit to replace a unique individual. Management errors would be more frequent and more difficult to correct quickly.

Clearly as we trend from the former to the latter, recruiting, training, assignment, and fair promotion policies become more complex and difficult.